Development and Application Design of PALVoSoS Model For Junior High School Students With Intellectual Disability: A Case Study in Sidoarjo – Indonesia

Vendyah Trisnaningtyas[a] , Punaji Setyosari[b], , Saida Ulfa[c*] , Mohammad Efendi[d]

[a,b,c,d] Doctoral Program, Universitas Negeri Malang Jl. Semarang no 5 Malang, Indonesia
[a] Fakultas Ilmu Sosial dan Ilmu Politik, Universitas Islam Balitar, Jl. Mojopahit no 4 Blitar, Indonesia
[a]*Coresponding Author's Email: vendyahtrisnaningtyas72@gmail.com

Abstract: Persons with Intellectual Disabilities need help in overcoming their limitations to face life independently. This study aims to develop a project-based action learning model for junior high school students with intellectual disabilities to improve and practice life skills. The main product is designing an action learning project model that integrates learning at the junior high school level, especially vocational skills in making cookies and social skills in project learning. The development model uses the ADDIE model. The data analysis technique is divided into two stages. Analyzing data from expert test results on the developed product model, expert judgment data were analyzed using the Content Validity Index (CVI) formula. Second, data analysis of learning outcomes, namely vocational skills, makes cookies according to the number of students using the n-Gain test to determine the model's effectiveness on student learning outcomes. Based on expert validation and trial results, the resulting model follows the learning needs of junior high school students with intellectual disabilities. The results show that the action learning project model's design meets the requirements for learning, especially for junior high school students with intellectual disabilities. Overall, the authors conclude that learning with the vocational and social skills action learning project model can be implemented and can improve learning outcomes.

Keywords: intellectual disabilities, life skills, vocational skills, social skills, project action learning, technology (WhatsApp), learning environment

1. Introduction

Research studies in several countries found that students with Mild Intellectual Disabilities (DI) are just like average and above-average students. Johnson and Blake (1960) showed that students with mild intellectual disabilities could learn, maintain and transfer complex motor and verbal skills according to their mental age. In particular, cognitive development indicates that variations commonly occur in children with mild intellectual disabilities (Fletcher et al., 2004). Subsequent research studies also revealed that students with mild intellectual disabilities have vocational competence and assess students' performance level with mild ID on various skills (Tiwari, 2011).

IDEA (IDEA, 2004) emphasizes that special education results are teaching about work and independent living. Labor aims to provide financial independence, self-fulfillment, and self-confidence (Jahoda et al., 2009). Individuals with intellectual disabilities (ID) often experience more significant difficulties obtaining post-school work than students with other disabilities (Räty et al., 2016). Students with Intellectual Disabilities face obstacles to post-secondary work, such as a lack of necessary skills and a sense of insecurity in a social context (Kocman et al., 2018). To address the gap in post-school employment of individuals with Intellectual Disabilities, it is recommended that educators include content such as specific skills, namely career, technical, such as cleaning, washing, cooking and copying; Hard skills and social skills namely, "character" traits, attitudes, and intangible behaviors personality-specific skills to enhance one's interactions, performance, and career prospects "(Agran, M., Hughes, C., Thoma, CA, & Scott, 2016).

Types of life skills emerge in response to individual needs in real-life situations (Javrh & Mozina, 2018). In addition to adaptive and positive behavior, individuals can effectively face the demands and challenges of everyday life (WHO, 1997). Especially in developing talents and choosing interests that match their abilities (Nair & Fahimirad, 2019). Vocational skills and social skills are part of life skills. Life skills for students with special needs are essential and valuable for them to get severe education and training carried out at home, in schools, and the community. In addition, there are limited materials developed in schools because they have not implemented the Individual Education Program specifically in every activity for these students (Al-kahtani, 2015). In Indonesia, students with intellectual disabilities (DI) have not received attention in developing their independence, especially life skills, which are a significant part of living and working in specific social, cultural, and environmental contexts.

The appropriate learning model in the learning process at school supports the development of students with intellectual disabilities. The development of learning tools, media, learning resources, and support for an appropriate learning environment is needed in the learning process for students with intellectual disabilities. The design of a practical learning model and leads to activities that train the independence and skills of students with intellectual disabilities will help develop students' abilities. The action project learning model that prioritizes direct practical exercises and the existence of interaction activities between students allows students to

communicate with fellow students who are learning together, supported by parents and the community in the learning process—prioritizing the needs of students in developing their talents and interests in life skills, especially vocational skills and social skills that will be needed after completing their studies to face life. When students are equipped with sufficient skills to be ready to work, students will be able to compete in the world of work.

2. Literature Review

2.1 Disability Intellectual

DSM V states (American Psychic Association, 2013) Intellectual Disability (DI) involves a decrease in general mental abilities that affect adaptive function in three domains or areas. This domain determines how well an individual copes with daily tasks: (1) The conceptual domain includes skills in language, reading, writing, mathematics, reasoning, knowledge, and memory; (2) The social domain refers to empathy, social judgment, interpersonal communication skills, the ability to make and maintain friendships, and similar capacities; (3) The practical domain centers on self-management in areas such as personal care, job responsibilities, money management, recreation, and organizing school and work assignments.

Intellectual disabilities have no specific age requirements, and individual symptoms must begin during the developmental period and be diagnosed based on the severity of the deficit in adaptive function. This disorder is considered chronic and often co-exists with other mental conditions such as depression, attention-deficit / hyperactivity disorder, and autism spectrum disorders (Hagiwara et al., 2013).

The DSM-5 emphasizes the need to use standardized clinical assessment and intelligence testing when diagnosing Intellectual Disability, with the severity of the disorder based on adaptive function rather than IQ test scores alone. By eliminating IQ test scores from the diagnostic criteria but still including them in the description of the intellectual disability text, the DSM-5 ensures that they are not overemphasized as a determinant of a person's overall ability, regardless of an adequate level of functioning. This is especially important in forensic cases (Bertelli et al., 2018).

It is important to note that IQ or similar standardized test scores should still be included in the individual assessment. In the DSM-5, Intellectual Disability is considered to be about two standard deviations or more below the population, which equals an IQ score of about 70 or below. An assessment of intelligence in three domains (conceptual, social, and practical) will ensure that clinicians base their diagnosis on the impact of deficits in general mental abilities on the functions needed for everyday life. This is very important in the development of a treatment plan (Garrels & Arvidsson, 2018).

The updated criteria will help physicians develop a more complete, more accurate picture of the patient, an essential step in providing adequate care and services. Intellectual disability (intellectual development disorder) as a diagnostic term for the DSM-5 replaces "mental retardation," used in the previous edition of the manual. Besides, the name brackets "(intellectual development disorder)" were included in the text to reflect deficits in the cognitive capacity that began in the developmental period. The DSM is a manual used by doctors and researchers to diagnose and classify mental disorders. The American Psychiatric Association (APA) published the DSM-5 in 2013, culminating with a 14-year revision process. APA is a national medical specialty society of more than 37,000 member physicians who specialize in diagnosing, treating, preventing, and researching mental illness, including drug use disorders (Whitaker, 2008).

2.2 Life Skill

Life skills are abilities that everyone must have to face and solve various problems encountered in everyday life. Life skills are not merely skills for work or vocational skills, but include a broader understanding that consists of the various abilities needed by a person to face various problems in life so that they can face life's problems naturally, without being pressured, and able to seek and find solutions to the problems faced in achieving success and happiness in life in society.

Tyler (1947) and Taba (1962) suggest that life skills are one of the focuses of analysis in developing an educational curriculum that emphasizes life and work skills. The development of life skills puts forward the following aspects: (1) relevant abilities for students to master, (2) learning materials according to the level of development of students, (3) learning activities and student activities to achieve competence, (4) facilities, tools, and adequate learning resources, and (5) abilities that can be applied in the lives of students. Life skills will have a broad meaning if learning activities are designed to have a positive impact on students in helping solve their life problems and overcome life and life problems proactively and reactively to find solutions to their problems (Stone, 1985), (Tariq Bhuttah Mehmood et al., 2018).

UNESCO states that life skills can be translated into four concepts: (1) Learning to know means learning oriented towards logical and rational knowledge. Students dare to say opinions and be critical, and have a high enthusiasm for learning. The skills to ask questions and dare to express opinions need to be developed during the

learning process; (2) Learning to do (learning to do life), the aspect of being achieved is the ability of students to solve daily problems. Learning is directed at developing problem-solving skills. The selected learning material should provide alternatives to students because this learning concept is not only knowing and understanding the material, but students should be able to do something useful in life. This is consistent with John Dewey's concept of Learning by Doing. It should be a strategy in which learning is carried out; (3) Learning to be (learning to be yourself), this vision becomes very important because learning should be oriented towards developing students to become independent individuals and have self-esteem. The learning given should be able to motivate to live in the present era and have a life orientation for the future so that students can be themselves in terms of self-actualization; (4) Learning to live together, learning is directed at forming students who have the awareness that they live together in a global world with many people with various languages and diverse ethnic, religious and cultural backgrounds. Inculcating values about human tolerance, environment, tolerance, peace are the main aspects that must be internalized in the awareness of students (Westbrook, 1993), (Talebi, 2015), (Williams, 2017)

In Indonesia, life skills can be divided into two main types (Depdiknas, 2003): (1) Generic life skills, including personal skills and social skills. Personal skills include skills in self-awareness or self-understanding (self-awareness) and thinking skills. Meanwhile, social skills include communication skills and collaboration skills; (2) Specific life skills, namely skills to deal with certain jobs or circumstances, including intellectual or academic skills and vocational skills.

2.2.1 Social Skill "Communication and Cooperative"

Social skills can be grouped into four types of skills, namely; (1) Survival skills can be defined as skills that include obeying rules and following directions; (2) Interpersonal skills, on the other hand, include skills such as empathy, collaborative learning, sharing and relationships; (3) Problem-solving skills, differently, include skills such as taking responsibility, asking for help, making decisions and seeking independence; (4) conflict resolution skills include skills such as overcoming difficulties and apologizing. These skills also include the internal peace of people where most conflict occurs (Johnson, 2016). Social skills are important in the workplace; this lack of skills will maintain long-term job placements for intellectual disabilities. Social competence is important in determining success in competitive work for persons with intellectual disabilities (Chadsey-Rusch, 1992).

The importance of social competence to succeed in work in society for intellectual disabilities is shown by many studies. Social competence plays an important role in job retention for persons with intellectual disabilities (Calkins, C.F. and Walker, 1990). D. Lepaitė explains the relationship between social skills and competence is the ability to be applied in life. Each personal competency is closely related to social skills and appropriate social abilities. Social competence extends to various domains of social function: not only as personal relationship skills, communication, cooperation, but also as self-management skills or problem-solving skills (Lepait, 2003). Vaughn, Hogan also identified social competencies related to personal characteristics; Social competence manifests as social cognition skills, effective communication, and positive relationships with others (Vaughn, S., Hogan, 1990).

Effective social problem solving requires reading the feelings of a person and others and accurately labeling and expressing those feelings (Zins et al., 1998). Well-developed social skills can help youth with intellectual disabilities develop strong and positive peer relationships, succeed in school, and begin to successfully explore the roles of adults such as employees, coworkers/colleagues, and community members. Social skills also support the positive development of children's relationships with healthy adults, family members, and peers. Hair observed that adolescents who have strong social skills, particularly in the areas of conflict resolution, emotional intimacy, and use of pro-social behavior, are more likely to be accepted by peers, develop friendships, maintain more robust relationships with parents and peers, seen as an effective problem solver, fostering greater interest in school, and performing better academically. Adequate social skills need to be acquired while students are still enrolled in school and further supported and refined in the post-secondary, community and work environment (Hair et al., 2002).

In Indonesia, social skills that are easy for students to do at school are to participate in activities that contain physical elements such as sports or other practical activities that are able and easy to adapt to their surroundings, such as with the same friends following these activities positively (Burhaein, 2017). Social skills are self-adjustment as well as studying the surrounding environment and being able to interact positively (Maharani, L., & Damayanti, 2012). Social skills can improve individual relationships with their environment in a positive way, such as growing empathy, participating or engaging in group activities, helping each other, communicating with others, negotiating, and solving problems (Kiliç, K. M., & Güngör Aytar, 2017). Children in adolescents with intellectual disabilities show less social skills than their peers in the general population (Marder, C., Wagner, M., & Sumi, 2003). The level of social skills among students with intellectual disabilities is positively related to adjustment during secondary school (Marder, C., Wagner, M., & Sumi, 2003), post-school work (Cameto, 2005),

and post-school community participation (Wagner, 2005).). Social skills are skills possessed regarding adaptation to the surrounding environment, such as interactions with certain socially acceptable communities and beneficial without causing negative effects on their environment (Kiliç, K. M., & Güngör Aytar, 2017). It can be concluded that social skills are a person's ability to study the environment and be able to interact with that environment positively, and be able to reduce negative behavior that will arise when interacting.

2.2.2 Vocational Skill "Cooking"

Vocational education prepares people to work as technicians or in various jobs such as commerce or crafts. Vocational expertise is usually based on manual or practical activities, traditionally non-academic, related to a particular trade, job, or occupation (Iroegdu & and Dala, 2017). Vocational skills teach skills that enable a person to master a particular subject or procedure applicable to a career. Oni defines vocational skills that are achieved in a direct environment that are usually not in the classroom (Oni, 2007); Ben postulates that training in these skills can be in one or more of these areas: carpentry, weaving (cloth, baskets, mats), design and manufacture of bags, rattan chairs, poultry raising, agriculture, gardening, masonry, cooking and sewing (Ben CB, 2010)

Four types of vocational skills: (1) Hard skills: skills that are applied, skills using physical skills are abilities that complement other jobs; (2) Soft skills: individual abilities for communication skills, management skills, etc .; (3) Technical Skill: the ability and knowledge required to perform certain tasks. They are practical and often involve mechanical, information technology, mathematical, or scientific assignments; (4) Living Skills: Vocational life skills or life skills to help people with disabilities make the transition to independent living. Life skills include: sewing, baking, making jewelry, leather work (Dasel & Marcus, 2019)

Vocational Education is a special education program tailored to students with special needs (Nanjwan, J. D. & Owojaiye, 2019). It is designed to help students with special needs for effective entrepreneurship, leading to advancement in specific jobs for jobs associated with several activities related to the establishment and operation of a business (Okeke, B. C. & Obidiegwu, 2005). Vocational skills development aims to provide students with the skills they need post-school to take part in economic life and open up new opportunities for productive employment. Loo stated that there are several benefits of vocational skills for individuals and entrepreneurs, namely: (1) Individuals with a significantly higher skill level over their lifetime than those without skills; (2) Skills also have a positive effect on mental abilities; (3) Increase job opportunities; (4) Improve living standards and create equality in society; (5) Improve skill development (Loo, 2018).

Vocational skills pay attention to individuals, especially those with special needs (Vanitha, 2017). Much more can be accomplished for special needs children to develop interests and to acquire vocational skills. Vocational skills provide the key to development when implementation enters learning for students with intellectual disabilities in schools. (Lang T, 2001) Vocational skills that can and may be used as a basis are cooking skills. Determining cooking skills: This cooking practice is partly due to a change in understanding of concepts such as "cooking" and "processed food" (Frances Short, 2003b). The terms related to cooking are open to interpretation in different cultural, historical, and generational contexts. Besides, little research data are available on home food preparation practices (McLaughlin C, Tarasuk V, 2003). Clear definitions of terms such as "cooking skills," "from scratch," "basic ingredients," and "pre-prepared food" are rare (F. Short, 2006).

Short described the types of skills involved in cooking as mechanical, technical, perceptual, conceptual, organizational, and academic and determined that these skills were difficult to define and were significantly more complex than how food was served. In much of the research literature to the date stated cooking skills to be the ability to perform tasks such as baking, roasting, boiling, and frying. Although there is a relationship between skills and knowledge as well as practice, it is a simplification of activities involving planning, organizing, and preparing meals (Frances Short, 2003a)

Food processing preparation skills are considered relevant for students with intellectual disabilities because they teach using pictorial instructions or systematic strategies. Learning food cooking skills at home, with family members, at school and a more formal learning environment, and through the form of mass media is also interesting as learning to cook especially starting in childhood (Caraher M, Dixon P, Lang T, 1999). There are four things to note in the process of developing cooking skills: (1) learning by using picture instructions (cards); (2) using pictorial instructions (computer system); (3) using a systematic push strategy; (4) combining the time delay with cards (Lancioni & O'Reilly, 2002) For students with intellectual disabilities the main reasons for learning cooking skills are to live independently, to prepare for post-school work and constructive work involvement, and to support their independence at the time. works. (Lang T, 2001) Making cakes and using recipes is one part of the core content of learning, both in terms of using recipes, following the making steps of the recipe, comparing and making the recipe itself. Knowledge of common words and concepts that occur during cooking is learned simultaneously. By learning cooking skills, students with mild intellectual disabilities are able to overcome difficulties using recipes during baking lessons at home and at school. The difficulties with regard to intent - that is, the meaning or taste of the recipe - are ingredients, kitchen utensils and knowledge of how to perform certain tasks (Brunosson, et al., 2014).

2.3 Technology (WhatsApp) as a social media for persons with intellectual disabilities

Entering the industrial era 4.0 requires that every individual is accustomed to using the latest technology to be applied in daily activities so that all activities run well. The use of technology also helps us communicate smoothly, the speed of information obtained because good technology has a positive influence on every activity (Nurhasanah, et al., 2019). Along with the development of the internet, of course there are other media that make it easier for someone to communicate, namely social media. The use of social media is now one that makes it easier for everyone to communicate. Simply by using a social media, people can very easily communicate with the target person. The use of social media to communicate is certainly not something new anymore, as is children with special needs (Gultom & Atnan, 2019).

In the era of globalization in the world of education, there are many learning obstacles experienced by children, including children with intellectual disabilities who experience slow learning (slow learner). Children have difficulty expressing what they are thinking. When they are spoken to, the language used should be as simple and clear as possible. They depend a lot on teachers and parents when learning, tend to find it difficult to understand something abstract, so they need help from parents and teachers to help and guide them in learning (Megawati & Ainin, 2018). Parents are the main providers of social support for children, related to the problems faced by children with special needs (down syndrome), and they are able to become independent individuals, even achieving achievements so that they can be accepted by the wider community (Santika et al., 2020).

As social beings, they need interaction or relationships, namely by communicating, direct communication, and indirect communication. Face-to-face communication between one person and another is often referred to as interpersonal communication. In general, interpersonal communication can also be interpreted as a process of exchanging messages, meanings, or information between people who communicate with each other (Gultom & Atnan, 2019). Interpersonal communication has five characteristics, namely: (1) openness (openness), (2) empathy (empathy), (3) support (supportiveness), (4) positive feelings (positiveness), and (5) equality (Devito). , 2013). Interpersonal communication between them is also supported by a sense of openness, affection, and mutual trust. Therefore, parents also have a lot of confidence in their children in teachers to develop children's talents and creativity (Autism) (Ritonga & J., 2016).

Using WhatsApp, social media students will be motivated to learn and think to find answers to any given problem. This is, of course supported by WhatsApp Messenger Group technology so that students can interact, openly express opinions, and get answers to every problem quickly (Kartikawati & Pratama, 2017). Making WhatsApp groups to support student learning activities to be more active and useful in using gadgets, because WhatsApp is indeed very effective in making communication easier (Anggraini & Djatmiko, 2019). For children with special needs the WhatsApp Group will help communicate and the role of the classroom teacher in the teaching and learning process is needed actively, because it is not uncommon for messages to be conveyed repeatedly, so that students with learning difficulties can absorb the contents of the message, in other words, the teacher in delivering interpersonal communication, the content of the message that the teacher conveys must be concrete, so that students will well receive the message. This relationship really helps students to motivate learning to students even though they have to explain again the material that has been explained. Supporting factors for interpersonal communication between classroom teachers and students using social media in the form of WhatsApp, namely successfully implementing positive attitudes with students, students responding to what the class teacher said even though a little, and messages conveyed by question and answer or discussion (Ritonga & J., 2016).

2.4 Learning Environment

The term "learning environment" means a formal or non-formal setting in which children acquire the knowledge and skills to use that knowledge in their daily lives. Learning environments can take the form of schools and colleges or even cultural centers, hobby centers, or social clubs. An inclusive and learning-friendly environment (ILFE) welcomes, nurtures and educates all children regardless of gender, physical, intellectual, social, emotional, linguistic or other characteristics (Shaeffer, 2014).

Inclusive education provides equal opportunities between students with special needs and students in general to receive education of the same quality in one learning activity in one class (N. Harris, 2018). A learning environment that supports and upholds the idea that everyone is different and has different needs, especially in the development of skills (Hirvonen, 2011). Some students may need more support to access learning programs and achieve their goals than others. There are many aspects of a supportive learning environment that facilitate connection, sharing and learning for students including physical, social, aesthetic and organizational elements. Effective teachers give consideration to each of these aspects as they contribute to inclusive learning arrangements (The Department of Education Tasmania, 2015)

It is indispensable to create a learning environment that is respectful, friendly, and supportive of all people (Bradley et al., 1989). Develop an environment where students feel connected and safe to take risks with their learning, as well as consider the learning environment for several types of students created by teachers with

support from various professionals (Scott, 2018). The learning environment should adapt to changes made to accommodate differences. individual students to support their learning and well-being (Kozleski & Waitoller, 2010). Students with intellectual disabilities may need areas to play, study and carry out certain activities with extra supervision for the safety of any aspect of the learning environment or climate for possible access to promote. Learning facilities allow all students to learn comfortably, for students who experience certain obstacles can be comfortable to move around or use learning facilities that are tailored to their needs. (The Department of Education Tasmania, 2015).

2.5 Learning Model

The learning model is a conceptual framework that describes a systematic procedure for organizing learning experiences to achieve specific learning objectives and serves as a guide for learning and proclaimed news bearers and teachers in implementing learning activities (Law of the Republic of Indonesia Number 20, 2003).

The learning model is basically a form of learning that is illustrated from beginning to end which is typically presented by the teacher. In other words, the learning model is a package or frame for the application of learning approaches, methods and techniques. In practice, teachers must remember that no learning model is the most appropriate for all situations and conditions. Therefore, in choosing the right learning model, it must pay attention to the condition of students, the nature of the teaching material, the available media facilities, and the conditions of the teacher himself.

The learning model designed for students with intellectual disabilities is a learning activity for children with special needs when they get the opportunity to learn and develop their competence and talent interests. The development of the design of this learning model is sought to meet the needs of students and to assist teachers and parents in the learning process of vocational skills and social skills both at home and at school.

2.5.1 Project Based Learning

Project Based Learning is familiar to teachers in every learning process in the classroom (Melin et al., 2009). The characteristics of PjBL have great potential to provide a more engaging and meaningful learning experience for students: (1) Students make decisions and create a framework; (2) There is a problem for which the solution is not determined in advance; (3) Students design processes to achieve results; (4) Students are responsible for obtaining and managing the information collected; (5) Students evaluate continuously; (6) Students regularly review what they are doing; (7) The final result is in the form of a product and is evaluated for its quality; (8) The class has an atmosphere which provides for fault and change tolerance. Project learning has stages including (1) planning stage; (2). implementation stage; (3). the evaluation or assessment stage, (Aldabbus, 2018). While the advantages of PjBL for students: (1) Increase motivation; (2) Improve problem solving skills; (3) Increase collaboration; (4) Improve resource management skills, (Chiang & Lee, 2016), (Capraro et al., 2013).

Learning resources in the project-based learning model are multidimensional. Project assignments are raised from real problems to provide opportunities for students to improve their abilities and to understand the implementation of the competencies being learned. Project-based learning (PPA) provides opportunities for students to build on these qualities and delve deeper into traditional academic content and understand how it applies to the real world. The implementation of the PjBL model is to create conditions for the learning process by following the syntax, thereby creating interactions between teachers, students and learning media following the characteristics of the PjBL Model. There are seven steps the PjBL model can rely on to be implemented in the vocational learning process. The seven steps of the PjBL model consist of three main (primary) stages which are then broken down into seven (secondary) stages. The main stages consist of (1) debriefing competency skills, which aim to make students have an understanding of the expected outcome abilities, have high motivation because their project assignments must be completed in the real world, have an understanding of the concept of teaching materials, and have learning content skills that are important to do, (2) project work, student assignments as project work in the PjBL model are elevated from real-world problems and realistic work-stage processing to real workplaces relevant to learning outcomes, and (3) evaluation, which aims to reveal process achievements. learning and student competence, so that it becomes a problem for assessment and evaluation. 2.5.2 Action Learning

The dimension of Action Learning in the vocational and social learning process is an alternative method to complement human resource improvement methods that use standard concepts around the world through classical curriculum (Reason et al., 2014). Action learning is based on the understanding that the best way to learn is when individuals are directly involved with real-life problems and then reflect on what happens as a result of their actions and whether those actions are appropriate or not, (Yonjoo Cho, 2013). Action learning is learning while acting and playing according to the child's physical and psychological maturity and development, presented attractively, creatively, and safely (Utomo, 2013). Action learning also provides learning opportunities for students to experience up close a real life setting the application of topics and content that are learned or discussed

in class (Cho & Egan, 2009). Research outside the classroom places them in discussing their findings with the class.

The advantage of this learning model is that it can be used with any subject or application (Projects & Projects, 2015). Three main factors are related to the Action Learning process: (a) Task; Challenging problems are at the heart of all Action Learning processes; (b) Team; Action Learning is done by a team of 4 to 8 people; (c) Thoughtful Action; Effective Action Learning activities should be balanced between teamwork and team learning. This process requires adequate timing and a variety of tools to carry out their work, reflect on the process, gain new principles and understanding, and share roles among team members, (Pedler et al., 2005).

The Action Learning Model is designed to be a framework for reflection, action and evaluation. The Quality Teaching Framework includes three pedagogical dimensions: (1) Intellectual quality, which is based on promoting a high intellectual level. The elements of this dimension are: deep knowledge, deep understanding, knowledge of problems, higher order thinking, language and communication; (2) A quality learning environment, which is based on promoting a productive learning environment that focuses on learning, positive relationships and clear expectations between teachers and students. The elements of this dimension are: explicit quality criteria, engagement, high expectations, social support, student self-regulation and student direction; (3) Significance which is based on involving meaningful learning that connects learning with previous experiences, various perspectives and contexts outside the classroom. It consists of the following elements: background knowledge, cultural knowledge, knowledge integration, inclusiveness, connectedness and narrative (Welskop, 2014).

Action Learning Learning Model is basically to make students active in learning and students learn not only to listen, but play an active role in their participation in learning. The teacher here only becomes a facilitator, which facilitates students to learn to discover what they are learning, all of which are summarized in a modification of the following steps: (a) Explanation of Tasks; Early learning to students about the topic by providing background information through lessons with lectures and presenting pictures and photos while students listen carefully to the material provided by the teacher; (b) Forming Groups; At this stage, students are grouped into groups for later discussions, fieldwork and presentations; (c) Problem Identification; After students have been grouped, students are given problems to be identified by students in groups; (d) Goal Setting; Students enter into groups and discuss what will be the goals in the fieldwork later; (e) Determining Action; After setting goals, students immediately set the action to be carried out in field work; (f) Implementing Action; Students in groups according to the purpose of field work and their place to go to the field work for interviews, conduct activities; (g) Making a Report; After taking the action, students return to the classroom to make fieldwork reports; (h) Presentation; After students have finished doing fieldwork and discussed making reports, students must present the results of the fieldwork report (Cho & Egan, 2009).

2.5.3 Project Action learning

Project Action Learning is AL with PjBL which is combined in the learning process to get an activity based on learning action / action with a project, individually or in groups to increase self-efficacy and collective efficacy (Law & Chuah, 2004). The PAL learning process consists of: (1) Inter-project learning, namely knowledge learned across projects. Learning teams acquire knowledge through projects and experiences, and bring learned knowledge to new projects. The infrastructure for learning and facilitation is essential for learning to occur and for making it part of the project. Knowledge sharing across the organization is emphasized in the concept of inter-project learning, so technology tools and human resource support aimed at sharing knowledge are essential for the kind of learning that occurs during the project; (2) Learning in projects that is, in a project, knowledge is created and shared by focusing on tasks, which supports project delivery by solving problems identified during the project. Learning takes place discussions between team members to complete assignments. Intra-learning thus occurs throughout the project, and is repeated. This intra-learning cycle can be broken down by project phases, such as the routine reporting cycle and review meetings; (3) Individual learning in teams, namely learning is emphasized by a behavioral approach by connecting directly to several actions that follow. Basically, learning is seen as a process of adjusting behavior in response to experience. From this perspective, if no change in behavior is recorded, then no learning can be said to have occurred, (Health et al., 2015). Learning includes the acquisition of existing and developing new knowledge, attitudes and skills; application of knowledge, attitudes and skills in existing or new contexts; with the aim of improving performance (Law & Chuah, 2004); (4) Individual empowerment, namely empowerment experienced by individuals, beyond the normal operation of the mind, enabling autonomy and creativity. In addition, what is empowered must be taken from the cultural learning routine of the current structure and pushed into new conditions with new findings coming from shared visions and goals in question.

There are three dimensions to this learning framework: (1) Identification of learning objectives in the project team; (2) Development of learning approaches and motivation systems to enhance team learning; (3) Development of an evaluation system for self-evaluation and objectives. The Project Action Learning (PAL) Framework aims to

establish a learning framework for selected learning teams, enhance learning, build a culture of team learning, and cooperative learning. Project teams are grouped according to their respective functions; they are assigned specific tasks and evaluated regarding predefined performance goals or expectations. Apart from the performance goals set by the teacher, individuals also have individual learning goals. When the project is being processed, team members are facilitated by project tasks, from which their job knowledge can be inspired and enhanced. In addition, individual learning is expected to occur in teams for members to meet the required performance goals. Mutual benefits can be achieved through a cohesive relationship. As the project progresses with the assistance of the facilitator, team members apply their existing or newly acquired knowledge to project tasks. The facilitation and evaluation process is designed to influence both individual and team learning as teamwork towards project objectives. The project team action learning framework is designed to provide the team with a challenge (project) and learning environment with guidance and facilitation. Project and learning objectives are the starting blocks of this learning framework. The facilitator / teacher plays an active role in the PAL process to assist individuals in home and school learning teams by sharing their knowledge to complete project assignments as a team. In addition, the facilitator / teacher also guides the team through the process of knowledge creation, application, retention, and sharing (Law & Chuah, 2004)

2.5.4 PALVoSoS

The development of the Project Action Learning Vocational and Social Skill (PALVoSoS) model design is a development from PAL which will be applied to students with intellectual disabilities in learning vocational skills and social skills both at home and at school. The selection of the PAL model that was developed into PALVoSoS was based on the descriptions of the theories found by the authors described above.

The PALVoSoS development design is prepared by paying attention to the important parts of learning objectives that suit the needs of students with intellectual disabilities and outlines the steps in the learning process so that it can enrich teachers to be more creative and innovative in the learning process in class, help teachers prepare learning activities, help teachers and parents as well as the community to work together in the learning process so that students can focus more on developing life skills skills that will be used to welcome the future, namely vocational skills and social skills. When PALVoSoS is implemented: 1) In the learning process both in the classroom, at home and in the community through learning action projects, it is hoped that the teacher can provide opportunities for students with intellectual disabilities to learn and practice developing life skills, especially vocational skills and social skills both individually or in groups; 2) The teacher will provide learning according to the results of the initial assessment to find out what competencies students have and what competencies must be prepared and assisted to be developed in student learning activities. The pre-learning assessment is carried out with the hope that the teacher can arrange individual education programs in more detail according to the competencies and needs of students, so that the final goal in the learning process can be achieved; 3) The teacher prepares teaching materials in the form of handouts and media with technology that can help facilitate activities in accordance with the conditions of students with intellectual disabilities in the learning process, including evaluations that will be carried out on every activity carried out either by observation or test learning outcomes; 4) The teacher provides the opportunity for students to carry out each activity according to their competence and motivates students to complete projects that have been arranged individually or in groups so that they can be completed properly according to a predetermined design; 5) The teacher collaborates with parents and the community to develop life skills skills of students in a community observing children with intellectual disabilities; 6) Students have the opportunity to be assessed on their ability / competence either by observation or test results of learning so that learning is in accordance with what must be developed and trained; 7) Students are given the opportunity to choose, determine and implement projects according to their competence; 8) Students have the opportunity to use Handout teaching materials and media according to their competence, especially media with technology that can help expedite activities; 9) Students have the opportunity to choose groups and study individually or in groups; 10) Students have the opportunity to present the results of the projects they have made either individually or in groups according to the ultimate goal of learning.

3. Research Questions

The purpose of this study was to develop a project-based Action Learning model design for vocational skills learning, especially food processing materials on craft subjects in junior high schools. Based on the background above, the problem in this study is

- How can the PALVoSoS design be effectively used in learning activities for students with DI limitations?
- Can the PALVoSoS model improve vocational skills and social skills for students with DI disabilities?

4. Research Methods

4.1 Research Design

The Vocational and Social Skill (PALVoSoS) Action Learning Project Model in this study follows the steps of developing the ADDIE Model instructional design which consists of five stages: analysis, design, development, implementation, and evaluation (Branch, 2009). This research aims to produce a quality Project Action Learning model design in improving students' abilities in improving vocational skills and social skills in everyday life. This research focuses on the development process, validity, and implementation of the PALVoSoS model design.

There are various variations and versions of the ADDIE model. During the Analyze (analysis), the designer identifies learning problems, goals and objectives, audience needs, existing knowledge, and other relevant characteristics. This analysis also considers the learning environment, any constraints, delivery options, and the schedule for the project. The principle in this stage is to collect all existing potentials and problems because research basically starts from those potentials and problems. Design (design) is a systematic process for determining learning objectives. Detailed storyboards and prototypes are often created, and the look and feel, graphic design, user interface, and content are defined here. The design stage is a joint stage between product design and design validation (Branch, 2009).

Furthermore, development is the actual creation (production) of content and learning materials based on the design phase. Development steps include activities to create, purchase, and modify teaching materials. This step includes selecting activities, determining appropriate methods, media and learning strategies to be used in delivering program material or substance. Implement (apply) is the delivery of learning material to students. During implementation, the plan is put into action and procedures for training students and teachers are developed. The material is delivered or distributed to groups of students. After delivery, the effectiveness of the training materials is evaluated. The Evaluate stage (evaluating) consists of formative and summative evaluations. Formative evaluation is present at every stage of the ADDIE process. Summative evaluation consists of tests designed for reference items related to criteria and providing opportunities for feedback from users. Revisions are made as necessary (Branch, 2009).

One of the functions of the ADDIE model learning design is to become a guide in building effective and dynamic training program tools and infrastructure and support the training performance itself. The ADDIE learning model design is logical, in-depth and comprehensive and can be evaluated at every stage (Branch, 2009). This research is at the implementation stage, namely testing the use of the PALVoSoS model product in processing learning to make "Cookies" in a regular class which has 8 DI students using the Time Series Design experimental design (Dr. Marcel Dettling, 1983). The research design used is the time series design, in this design the group used for research cannot be selected randomly. Before being given treatment, the group was given a pretest up to three times, with the intention of knowing the stability and clarity of the group's condition before being given treatment. If the three pretest results show different values, it means that the group is unstable, erratic, and inconsistent. After the stability of the group's condition can be clearly identified, then the treatment is given. This research design uses only one group, so it does not require a control group (Ary, 2010). The research design is shown in table 4.1 below:

Table 4.1 Research Design "time series design",(Marcel Dettling, 1983)

O1	O2	O3	X	O10	O11	O12

Keterangan:

X   : Treatment

O1, O2, O3,   : Pretest

O10, O11, O12,   : Posttest

The defining characteristic of Time Series Design is the repeated observations over time. There are three important elements that must be considered in conducting Time Series experimental research, namely control, manipulation, and observation: (a) Control. The control variable is the essence of the experimental method; (b) Manipulation. Independent variable manipulation is an operation that is deliberately carried out in experimental research. In the study, the independent variables were manipulated by involving treatment groups with different conditions; (c) Observation. After the researcher applies the experimental treatment, he must observe to determine whether the hypothesis of change has occurred (Azam, Prof. Nurfani SU, Apt, 2006)

4.2　Research Procedure

Proses penelitian pengembangan ini dibagi menjadi empat fase, yaitu: (1) studi pendahuluan meliputi kajian literatur dan observasi lapangan; (2) pengembangan desain model meliputi proses mengembangkan desain, pengembangan perangkat pembelajaran, instrumen tes hasil belajar ketemapilan kejuruan. (3) validasi dan revisi model meliputi uji kelayakan dari sudut pandang pakar (4) tahap uji coba model, yaitu penggunaan produk model dalam pembelajaran Prakaya Pengolahan membuat *"Cookies"* di kelas regular yg memiliki siswa DI.

4.3 Subject

The research and development process is divided into four phases, namely: (1) a preliminary study including literature review and field observation; (2) the development of model designs includes the process of developing designs, developing learning devices, instruments for testing vocational skills learning outcomes. (3) model validation and revision include feasibility testing from an expert's point of view (4) the model trial stage, namely the use of model products in pre-processing learning to make "Cookies" in regular classes with DI students.

4.4 Instrument

The research instrument consists of two components: an instrument for product assessment by experts and a test instrument for learning outcomes. The design expert validation instrument, material and media contains an assessment of the model design-construct totaling 26 statements. The learning outcome test instrument consists of 10 multiple choice questions and 5 essay questions.

4.5 Data Analysis

First, analyzing data from expert test results on the developed product model. Expert assessment data were analyzed using the Content Validity Index (CVI) formula. This analysis calculates two types of CVI (Hendryadi, 2014). The first type involves the content validity of individual items (i-CVI) and the second involves the content validity of the whole scale (s-CVI) (Polit & & Beck, 2006). The measurement scale uses a scale of 4 to avoid neutral and ambivalent midpoints. The scale used: 1 = irrelevant, 2 = somewhat relevant, 3 = moderately relevant, 4 = highly relevant. Then, for each item, the I-CVI counts the number of experts who provide relevant assessments, namely 3 or 4. Thus, the dichotomization of the ordinal scale becomes relevant = 1 and irrelevant = 0, divided by the total number of experts (Faculty of Economics, 2017).

Second, the data analysis technique of learning outcomes uses Time Series Design; (1) documentation is processed to assess learning outcomes during learning; (2) tests are given in preliminary (pre-test) and final (post-test) learning, and (3) observations to observe the learning process in class (James .A, 1973). The implementation of learning is defined as a total of twelve meetings with a schedule of six meetings before implementing or without the application of the model and six meetings using the PALVoSoS model. (Nasution, 2013) The arrangement can be seen in table 4.2.

No	Subject	Treatment	Meeting	Activity
1	Control Class	Before to the implementation of the PALVoSoS model	First Second Third	• Pretest 1,2 and 3 rd meetings • Learning with the Direct Instruction model • Conventional methods Lectures, questions and answers, working on problems in textbooks.
2	Experiment Class	After implementation of the PALVoSoS model	Fifth Sixth Seventh Eighth Ninth Tenth Eleventh	• Learning with the Project Action Learning Vocational and Social skill model • Use action project learning syntax • Methods of discussion, question and answer, presentations, doing group and individual assignments on worksheets, making clippings • Using game media, communicating with WhatsApp application technology tools, Handout teaching materials and worksheets. • Practice packaging skills and "Cookies" • Postest 10th meeting, 11,12

Table 4.2 Schedule of Classroom Learning Meetings according to the Time Series Design

The validity of the study used n-Gain non-parametric statistics to determine the effectiveness of the PALVoSoS model being implemented and to find out the difference between the vocational skills ability of making student "Cookies" before and after the implementation of learning with the PALVoSoS model implemented in class (Barnabas et al., 2020)

5. Results

5.1 Analysis Result

In accordance with the development stage of the ADDIE model, before carrying out development, first carry out an analysis. At this stage of the analysis, identification of the characteristics of students and the characteristics of the learning material is carried out. Based on the results of the investigation, it can be seen that junior high school student participants who have intellectual disabilities and experience learning difficulties are proven from expert data obtained from the school that the subjects include Mentally Defective, Boderline, Low Average students who have visual and audio learning styles with an IQ of 56 - 85. (JC Harris, 2013)

The learning materials for the processing aspects of making Cookies consist of theoretical and practical materials. Crafting materials for the processing aspect of making these "Cookies" have a broad scope. The learning objectives on the Processing Aspect of making "Cookies" are to understand the concept of food processing, the introduction of food ingredients, processing tools and techniques, and practice them in everyday life. This subject weights 2 credits (90 minutes), meaning that the time used in learning activities is very little compared to the wide coverage of the material. Therefore, it needs to be supported by learning with an action project model.

5.2 Final Design

Figure 5.1 Design PALVoSoS

Based on the ADDIE model, the development stage is carried out after going through the analysis phase. Before developing the Project Action Learning model, a study of various learning theories and learning model theories was carried out to produce a Project Action Learning Vocational and Social Skill (PALVoSoS) model integrated with project learning. The development stage of this model is described in the form of a model design in Figure 5.1 as follows.

The PALVoSoS design model has three different application scenarios in each learning environment: at home, at school, and in the community observing people with intellectual disabilities.

1) In the first scenario, learning begins in class with an assessment using game cooking to measure and find out the extent of student involvement in learning to be implemented in class so that teachers can prepare material according to the needs of students with intellectual disabilities. At home; 2) In the second scenario the learning

process can be carried out at school and home. The independent and group learning process is developed by using mobile with the application (WhatsApp) as a support, project-based vocational learning with face to face in the classroom using the facilities provided by the teacher in the form of teaching materials, in this case the researcher chooses handouts and game cooking media to find out the students' understanding. of the material provided. While the learning process at home utilizes mobile (WhatsApp) as a facility that can be used in action learning that integrates learning vocational skills and social skills in communication and cooperation from students individually or in groups. When the learning process by paying attention to the development of learning in the first and second scenarios using facilities from teachers who parents assist in supervision at home, namely the use of mobile with applications (WhatsApp), action learning activities will occur as described; 3) In the third scenario, the learning process is through project assignments by developing the ability to communicate and work in groups to complete the given task, namely the presentation of the results at the end of the project task which can also be carried out in the observer community of persons with intellectual disabilities, namely promoting and selling their products in the form of "Cookies. ".

The PALVoSoS implementation process emphasizes the needs and learning styles of students with DI. This means that students can learn in a context that suits their needs. So that learning planning cannot determine the estimated time given the limitations of DI students. Because in learning activities between students with DI have different times in learning a knowledge. The detailed PALVoSoS learning steps can be identified through learning activities that begin with (1) an assessment before the implementation of PALVoSoS; (2) Develop the PALVoSoS learning process; (3) Carry out the PALVoSoS learning process; (4) Evaluating students in the PALVoSoS learning process; (5) Home schooling learning environment, inclusive / regular schools and the community.

5.3 Design Validation Result

The results of the development of this design are then validated by learning design experts. Learning design experts provide assessments, comments and suggestions for revisions relating to the following aspects: (1) Identification of the objectives of learning life skills skills in the action project; (2) Selection of an action project learning approach in improving the learning of life skills skills; (3) Development of an evaluation system for vocational skills, communication skills and collaboration skills; (4) Adjustment of the learning environment in the learning process for the action project; (5) Using learning tools as facilities in the learning process for action projects; (6) Shows the correlation of the results of vocational skills and social skills with the action project learning approach.

Based on the data obtained from the expert validation calculations, it can be seen that the I-CVI results (relevance of each item). I-CVI calculations for the relevance of each item at the point-step. Twenty-six items on the validation instrument were marked as relevant and the I-CVI ranged from 0.66 to 1.00. Ten items have I-CVI = 1.00, nine items have I-CVI = 0.83 and seven items have I-CVI = 0.66. Based on these results, the 26 items contained in the validation instrument are considered relevant with the mean I-CVI = 0.84 and still greater than the I-CVI limit = 0.78. So it can be concluded that the learning design developed is in accordance with the dimensions of Project Action Learning (PAL). The results of the relevance of the validation of the experts can be seen in Figure 5.2
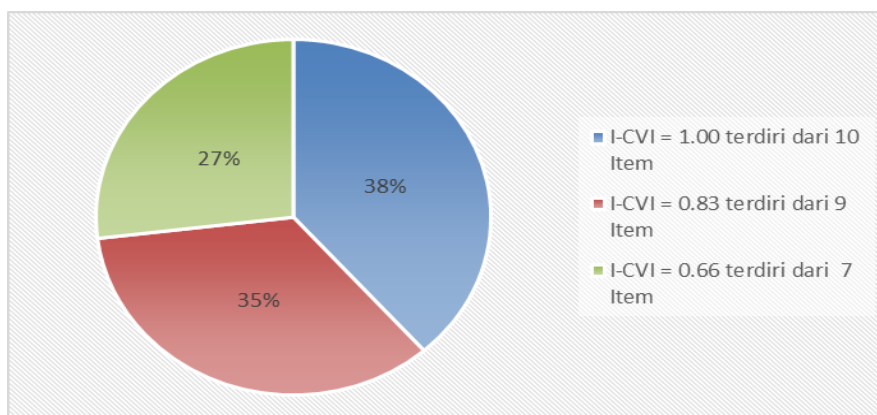

Figure 5.2. Expert Validation Result

5.4 Learning Outcomes

To find out the results of the implementation of the action learning project model, it can be seen in the test of student learning outcomes with the Time Series Design which uses the project action learning model showing that

the results of the research that have been done, the student's vocational skills in making cookies have increased as seen from the N-gain score in the table 5.1.

Table 5.1 N-gain The vocational skills of students making cookies

NO	Learning Series	Average N-gain	Category
1	Series 1	0.67	Medium
2	Series 2	0.68	Medium
3	Series 3	0.68	Medium
Average N-gain		0.68	Medium

Based on table 5.2, the increase in vocational skills to make student cookies after the implementation of the PALVoSoS learning model occurs in all three learning series with moderate effectiveness. When compared for each learning process, the N-gain score of vocational skills made students' cookies have a tendency to increase for each lesson, starting from 0.67 in the first series of lessons, 0.68 for series 2, and 0.68 for the third series. This shows that PALVoSoS learning has the effectiveness of improving vocational skills in making student cookies that are getting better for every lesson that is carried out.

The achievement of students' vocational skills in making cookies for each learning series can be seen from the distribution of test scores as shown in Figure 5.3
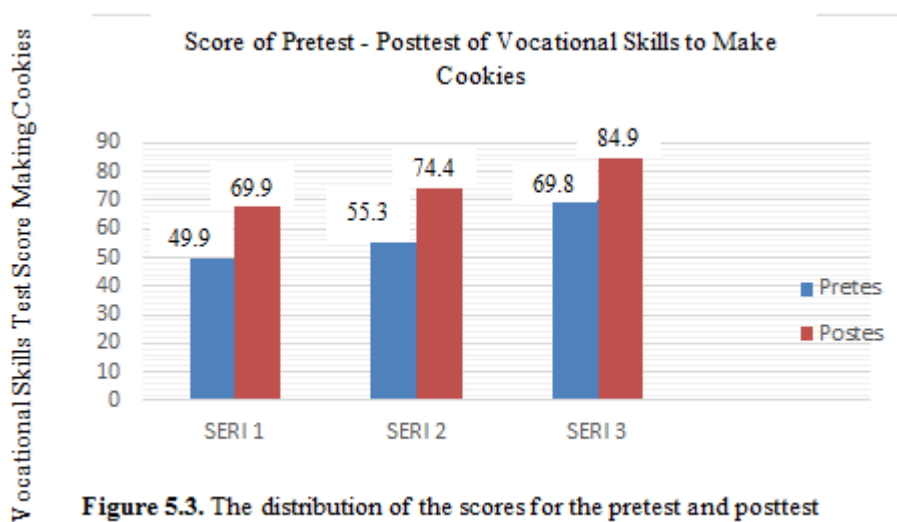
Figure 5.3. The distribution of the scores for the pretest and posttest vocational skills made cookies for students for each learning series

Increasing vocational skills to make student cookies accompanied by the achievement of a test score of vocational skills to make cookies is high enough. Based on Figure 5.3, the achievement of vocational skills test scores made student cookies in series 1 learning in the range of 69, series 2 in the range of 74, and continuing to increase up to the range of 84 in the third learning series. The increase and achievement of vocational skills to make student cookies which is quite high cannot be separated from learning activities with the PALVoSoS model which invites students to be active in the learning process to know and choose ingredients, recognize and select tools, prepare plans, compile recipes, shop for materials and tools, measure materials , use tools, create cookies, create cookies packaging, serve cookies that are learned. The improvement and achievement of vocational skills make student cookies can also be analyzed for each aspect as shown in table 5.2.

Table 5.2 Recapitulation of the score for the aspect of vocational skills in cooking cookies

No	Skills Aspects of Cookies Cooking Vocational	Learning Process									Average of N-gain
		Series 1			Series 2			Series 3			
		Pre Tes	Pos Tes	N-gain	Pre Tes	Pos Tes	N-gain	Pre Tes	Pos Tes	N-gain	
1	Identifying and selecting ingredients	44.5	69.4	0.81	49.5	71.8	0.79	51.4	73.1	0.81	0.80
2	Identify and select tools	38.5	62.3	0.63	38.5	63.8	0.70	53.7	76.0	0.93	0.75
3	Prepare a plan	44.5	71.6	0.96	52.9	72.9	0.73	56.8	73.0	0.60	0.76
4	Compiling a recipe	39.4	66.6	0.81	49.8	69.0	0.62	53.1	73.1	0.75	0.73
5	Shop for materials and tools	46.8	69.6	0.75	49.9	70.1	0.67	54.5	71.5	0.60	0.67
6	Measure materials	34.5	62.2	0.73	33.9	60.5	0.67	55.1	71.2	0.56	0.66
7	Using tools	44.5	56.8	0.29	45.3	68.0	0.71	53.7	74.3	0.80	0.60
8	Making cookies	35.6	54.8	0.42	44.1	61.3	0.45	50.6	71.3	0.72	0.53
9	Making cookies packaging	33.9	60.1	0.66	45.6	68.0	0.70	55.1	71.5	0.58	0.64
10	Serves cookies	33.0	59.9	0.67	35.3	63.3	0.76	53.0	67.3	0.44	0.62

Based on table 5.2, the PALVoSoS learning model has different effectiveness in improving vocational skills in making student cookies. Referring to the defined learning effectiveness category (Hartmann et al., 2013), information was obtained that the highest increase occurred in the aspects of knowing and choosing materials, knowing and choosing tools, planning and making cookies packaging while the other six aspects of vocational skills to make cookies included medium category.

Of the ten aspects of vocational skills in making cookies, the largest N-gain score occurred in the aspect of knowing and choosing ingredients with an average score of 0.80. This is because the ability to recognize and select material is the simplest ability, students only restate the information they have learned. Students with intellectual disabilities need sufficient time to be able to digest the information they get so they can remember and do it well (Brunosson et al., 2014)

The aspect of vocational skills to make cookies with the lowest N-gain score occurred in the aspect of making cookies with an average score of 0.53. In contrast to other aspects of vocational skills to make cookies, composing recipes also tends to increase for each lesson, although not very high. Predictable this is because students have difficulty putting together enough information during learning, so it does not form something intact. In addition, the ability to prepare recipes involves many other abilities, namely the ability to classify, generalize, compare and evaluate (Reicks et al., 2014).

6. Discussion

This study describes an action learning project design. Development of Vocational and Social Skills Action Learning Project designs for craft learning (processing) through five stages: analysis, design, development, implementation, and evaluation. The resulting product is an action learning project model design. A design expert first validates this product. Based on the evaluation results from the experts, it shows that the model design developed is suitable for use in learning. The implementation of this model in learning gives positive results on improving students' life skills skills, especially the vocational skills to cook cookies.

The advantage of this action project learning design is that it facilitates students to be able to collaborate and communicate with fellow students. (Bannan-Ritland, 2008) The action project learning experience allows students to communicate and collaborate both individually and in groups. (Cho & Egan, 2009) implemented have an impact on the overall student learning success. In project learning that trains students 'vocational and social skills on action learning projects involving the community to support the learning process (Davis et al., 2004) Community involvement can train students' social interactions. Interacting with other people is one of the most important factors influencing learning outcomes. It is through social interaction that students will build better communication (Kearney et al., 2015). In addition to training social interaction, implementing project learning can also improve vocational skills (Law & Chuah, 2004)

In the project learning design, students carry out activities to collect references from various sources. Students take advantage of the mobile technology device / mobile application (WhatsApp). Because in action learning projects, mobile / cellular technology has an important role in learning activities. Mobile devices as a facility can bridge and connect learning experiences. Mobile devices have many advantages such as being a tool for

communicating, looking for material, independent learning and can motivate learning (Ahmad et al., 2014)

The use of technology alone will not be sufficient to encourage learning without adopting appropriate pedagogy. (Suartama et al., 2019) Therefore, action lerning design is integrated with project-based learning. Project-based learning facilitates higher levels of learning and enhances skills and high levels of student participation. Based on the results of research, project-based action learning can improve student learning outcomes. This action learning project learning design emphasizes maximum student activity. students become independent learners, learn to communicate and collaborate, and learn to cook and offer their work. All activities carried out by students are directed to seek and discover their own learning experiences to develop intellectual abilities and mastery of higher competencies.

7. Conclusion

Design Project Action Learning Vocational and Social Skills is learning designed to integrate vocational skills learning, social skills and project learning. The results of the expert's due diligence on the design of the Action Learning Vocational and Social Skill Project, stated that all indicators were deemed appropriate and met the requirements for use in learning. The trial results of the Vocational and Social Skill Project Action Learning model show that the Vocational and Social Skill Action Learning Project has higher learning outcomes than the conventional model. This means that the Project Action Learning Vocational and Social Skills design can improve the learning outcomes of vocational skills in making cookies in the subject of Crafting Processing Aspects of making "Cookies". Based on the research results presented, it can be recommended for further research that this Vocational and Social Skill Project Action Learning model needs to be tested on learning materials with different characteristics. And it is necessary to develop project learning using a different platform.

References

1. Agran, M., Hughes, C., Thoma, C. A., & Scott, L. A. (2016). Employment social skills: What skills are really valued? Career Development and Transition for Exceptional Individuals, 39, 111–112. https://doi.org/10.1177/2165143414546741

2. Ahmad, W. F. W., Muddin, H. N. B. I., & Shafie, A. (2014). Number skills mobile application for down syndrome children. 2014 International Conference on Computer and Information Sciences, ICCOINS 2014 - A Conference of World Engineering, Science and Technology Congress, ESTCON 2014 - Proceedings, June. https://doi.org/10.1109/ICCOINS.2014.6868844

3. Al-kahtani, M. A. (2015). The Individual Education Plan (IEP) Process for Students with Intellectual Disabilities in Saudi Arabia : Challenges and Solutions. March.

4. Aldabbus, S. (2018). PROJECT-BASED LEARNING : IMPLEMENTATION & CHALLENGES. October.

5. American Phychiatic Association. (2013). DSM-5 Intellectual Disability Fact Sheet. American Psychiatric Association, 2.

6. Anggraini, R. A., & Djatmiko, A. A. (2019). Pemanfaatan Media Sosial (Group Whatsapp) dalam Menunjang Aktifitas Belajar Siswa di Luar Jam Sekolah di SMK Negeri 2 Tulungagung. Media Penelitian Pendidikan : Jurnal Penelitian Dalam Bidang Pendidikan Dan Pengajaran, 13(1), 1. https://doi.org/10.26877/mpp.v13i1.5082

7. Ary, D. et al. (2010). Introduction to Research in Education 8th edition,. Wardswoth Cengage Learning.

8. Azam, Prof. Nurfani SU, Apt, D. S. & D. A. R. (2006). Metodologi Penelitian Untuk Peningkatan Kualitas Pembelajaran Penelitian Kuasi Eksperimen dalam PPKP,. Direktorat Ketenagaan Direktorat Jendral Pendidikan Tinggi Departemen Pendidikan Nasional.

9. Bannan-Ritland, B. (2008). Teaching Instructional Design: An Action Learning Approach. Performance Improvement Quarterly, 14(2), 37–52. https://doi.org/10.1111/j.1937-8327.2001.tb00208.x

10. Barnabas, R. A., Rafli, Z., & Rasyid, Y. (2020). Implementation of Cognitive Strategy in Arabic Listening Class. Icels 2019, 387–391. https://doi.org/10.5220/0008999403870391

11. Ben C.B. (2010). Vocational technical education in Nigeria Ibadan: El-Summer Educational Books Nig. LTD.

12. Bertelli, M. O., Cooper, S. A., & Salvador-Carulla, L. (2018). Intelligence and specific cognitive functions in intellectual disability: Implications for assessment and classification. Current Opinion in Psychiatry, 31(2), 88–95. https://doi.org/10.1097/YCO.0000000000000387

13. Bradley, R. H., Caldwell, B. M., Rock, S. L., Ramey, C. T., Barnard, K. E., Gray, C., Hammond, M. A., Mitchell, S., Gottfried, A. W., Siegel, L., & Johnson, D. L. (1989). Home Environment and Cognitive

Development in the First 3 Years of Life: A Collaborative Study Involving Six Sites and Three Ethnic Groups in North America. Developmental Psychology, 25(2), 217–235. https://doi.org/10.1037/0012-1649.25.2.217

14. Branch, T. . (2009). Instructional Design: The ADDIE Approach. Springer International Publishing.
15. Brunosson, A., Brante, G., Sepp, H., & Mattsson Sydner, Y. (2014). To use a recipe not a piece of cake. Students with mild intellectual disabilities' use of recipes in home economics. International Journal of Consumer Studies, 38(4), 412–418. https://doi.org/10.1111/ijcs.12109
16. Burhaein, E. (2017). Aktivitas Fisik Olahraga untuk Pertumbuhan dan Perkembangan Siswa SD. Indonesian Journal of Primary Education Aktivitas, 1((1),), 51–58. https://doi.org/https://doi.org/10.17509/ijpe.v1i1.7497
17. Calkins, C.F. and Walker, H. M. (1990). Social competence for worlkers with developmental disabilities: a guidetp enhancing employment outcomes in integrated settings. Baltimore: Paul H. Brookes.
18. Cameto, R. (2005). Employment of youth with disabilities after high school. In M. Wagner, L. Newman, R. Cameto, N. Garza, & P. Levine (Eds.), After high school: A first look at the postschool experiences of youth with disabilities. A Report from the National Longitudinal Transition Study–2 (NLTS2) (Pp. 5/1–5/21). Menlo Park, CA: SRI International.
19. Capraro, R. M., Capraro, M. M., & Morgan, J. R. (2013). STEM project-based learning an integrated science, technology, engineering, and mathematics (STEM) approach. In STEM Project-Based Learning an Integrated Science, Technology, Engineering, and Mathematics (STEM) Approach. https://doi.org/10.1007/978-94-6209-143-6
20. Caraher M, Dixon P, Lang T, C.-H. R. (1999). The state of cooking in England: the relationship of cooking skills to food choice. Br Food J., 101((8)), 590-609.
21. Chadsey-Rusch, J. (1992). Toward defining and measuring social skills in employment settings. American Journal on Mental Retardation.
22. Chiang, C. L., & Lee, H. (2016). The Effect of Project-Based Learning on Learning Motivation and Problem-Solving Ability of Vocational High School Students. International Journal of Information and Education Technology, 6(9), 709–712. https://doi.org/10.7763/ijiet.2016.v6.779
23. Cho, Y., & Egan, T. M. (2009). Action learning research: A systematic review and conceptual framework. Human Resource Development Review, 8(4), 431–462. https://doi.org/10.1177/1534484309345656
24. Dasel, J., & Marcus, E. (2019). Vocational Skills and its Importance to Persons with Special Needs in Nigeria. December.
25. Davis, P., Florian, L., Ainscow, M., Dyson, A., Farrell, P., Hick, P., Humphrey, N., Jenkins, P., Kaplan, I., Palmer, S., Parkinson, G., Polat, F., Reason, R., Byers, R., Dee, L., Kershner, R., & Rouse, M. (2004). Teaching Strategies and Approaches for Pupils with Special Educational Needs: A Scoping Study. Research Report No. 516, 516(2004), 11–14.
26. Depdiknas. (2003). PENGEMBANGAN MODEL PENDIDIKAN KECAKAPAN HIDUP. Pusat Kurikulum, Balitbang Depdiknas Jl. Gunung Sahari Raya No. 4, Jakarta Pusat.
27. Devito, J. A. (2013). The Interpersonal Communication. United State of America: Library of Congress Catalog-in-Publication Data.
28. Dr. Marcel Dettling. (1983). Applied Time Series Analysis. Information Sciences. Institute for Data Analysis and Process Design Zurich University of Applied Sciences CH-8401 Winterthur, 29(1).
29. Fakultas Ekonomi, H. (2017). Validitas Isi: Tahap Awal Pengembangan Kuesioner. Jurnal Riset Manajemen Dan Bisnis (JRMB) Fakultas Ekonomi UNIAT, 2(2), 169–178.
30. Fletcher, K. L., Scott, M. S., Blair, C., &, & Bolger, K. E. (2004). Specific patterns of cognitive abilities in young children with mild mental retardation. Education and Training in Developmental Disabilities, 39(3), 270-278.
31. Garrels, V., & Arvidsson, P. (2018). Promoting self-determination for students with intellectual disability: A Vygotskian perspective. Learning, Culture and Social Interaction, April, 0–1. https://doi.org/10.1016/j.lcsi.2018.05.006
32. Gultom, G. P., & Atnan, N. (2019). PEMANFAATAN MEDIA SOSIAL DALAM KOMUNIKASI INTERPERSONAL GURU DENGAN MURID BERKEBUTUHAN KHUSUS (Studi Kasus

Komunikasi Interpersonal Guru dengan Murid Tunarungu di SLB Nurul Iman). Epigram, 16(1), 37–56. https://doi.org/10.32722/epi.v16i1.1422

33. Hagiwara, M., Balboni, G., Gomez, L., Simões, C., Gómez, L., John, E. A., Simões, C., Hagiwara, M., Balboni, G., Gomez, L., Lee, C., Mumardo, C., & Mo, E. (2013). Tell me About ID : Making the Definition of Intellectual Disability Accessible Around the World AAIDD International Interest Network. 2011, 2011.

34. Hair, E. C., Jager, J., & Garrett, S. B. (2002). Helping teens develop healthy social skills and relationships: What research shows about navigating adolescence. Retrieved September 20, 2004.

35. Harris, J. C. (2013). New terminology for mental retardation in DSM-5 and ICD-11. Current Opinion in Psychiatry, 26(3), 260–262. https://doi.org/10.1097/YCO.0b013e32835fd6fb

36. Harris, N. (2018). Autonomy , Rights and Children with Special Needs : A New Paradigm ? Working Paper 2 Legislative and Policy Developments in Special Educational Needs in England and Additional Support Needs in Scotland : Advancing Children and Young People' s Rights. January.

37. Hartmann, C., Dohle, S., & Siegrist, M. (2013). Importance of cooking skills for balanced food choices. Appetite, 65, 125–131. https://doi.org/10.1016/j.appet.2013.01.016

38. Health, C. M., Studies, C., & Publications, P. M. (2015). Fatigante, M, Bafaro, S, Orsolini, M (in press, 2015) And you? What do you think then?" Taking care of thought and reasoning in intellectual disability. In M. O'Reilly, J. Lester (eds) Child Mental Health: Discourse and Conversation Studies. London: Palgr. 1–32.

39. Hendryadi. (2014). CONTENT VALIDITY (Validitas Isi). Teorionline Personal Paper, 01(01), 1–5.

40. Hirvonen, M. (2011). From vocational training to open learning environments: Vocational special needs education during change. Journal of Research in Special Educational Needs, 11(2), 141–148. https://doi.org/10.1111/j.1471-3802.2010.01159.x

41. IDEA. (2004). The Individuals with Disabilities Education Improvement Act of 2004 Guidance on Required Content of Forms. The Congress Required the U.S. Department of Education, 7324–7324.

42. Iroegdu, V. U., & and Dala, B. G. (2017). Vocational Education for persons with visual impairment in Nigeria. National Association for Exceptional Children, Issues in special needs education A festschrift of prof.(sr.) Theresa Anbang, 342–350.

43. Jahoda, A., Banks, P., Dagnan, D., Kemp, J., Kerr, W., Willams, &, & V. (2009). Starting a new job: The social and emotional experience of people with intellectual disabilities. Journal of Applied Research in Intellectual Disabilities, 22, 421–425. https://doi.org/10.1111/j.1468-3148.2009.00497.x

44. James .A. (1973). Quasi-Experimental Approaches to Social Science dalam Quasi-Experimental Approaches (ed. James A. Caporaso & Leslie L. Roos Jr),. Northwestern University PressCook,.

45. Javrh, P., & Mozina, E. (2018). The life skills approach in Europe: Summary of the lse analysis. February 2018.

46. Johnson, J. L. (2016). School-Wide Social Skills Instruction. Retrieved from Https://Vkc.Mc.Vanderbilt.Edu/Assets/Files/Resources/Psisocialskills.Pdf.

47. Kartikawati, S., & Pratama, H. (2017). Pengaruh Penggunaan WhatsApp Messenger Sebagai Mobile Learning Terintegrasi Metode Group Investigation Terhadap Kemampuan Berpikir Kritis. Jupiter (Jurnal Pendidikan Teknik Elektro), 2(2), 33. https://doi.org/10.25273/jupiter.v2i2.1797

48. Kearney, J., Wood, L., & Teare, R. (2015). Designing inclusive pathways with young adults: Learning and development for a better world. In Designing Inclusive Pathways with Young Adults: Learning and Development for a Better World. https://doi.org/10.1007/978-94-6300-157-1

49. Kiliç, K. M., & Güngör Aytar, F. A. (2017). The effect of social skills training on social skills in early childhood, the relationship between social skills and temperament. Education and Science, 42((191)), 185–204. https://doi.org/https://doi.org/10.15390/EB.2017.7162

50. Kocman, A., Fischer, L., & & Weber, G. (2018). The employers' perspective on barriers and facilitators to employment of people with intellectual disability: A differential mixedmethod approach. Journal of Applied Research in Intellectual Disabilities, 31, 120–131. https://doi.org/10.1111/jar.12375

51. Kozleski, E. B., & Waitoller, F. R. (2010). Teacher learning for inclusive education: Understanding teaching as a cultural and political practice. International Journal of Inclusive Education, 14(7), 655–666. https://doi.org/10.1080/13603111003778379

52. Lancioni, G. E., & O'Reilly, M. F. (2002). Teaching food preparation skills to people with intellectual disabilities: A literature overview. Journal of Applied Research in Intellectual Disabilities, 15(3), 236–253. https://doi.org/10.1046/j.1468-3148.2002.00122.x

53. Lang T, C. M. (2001). Is there a culinary skills transition? Data and debate from the UK about changes in cooking culture. J Home Econ Inst Aust., 8((2)), :2-14.

54. Law, K. M. Y., & Chuah, K. B. (2004). Project-based action learning as learning approach in learning organisation: the theory and framework. Team Performance Management: An International Journal, 10(7), 178–186. https://doi.org/10.1108/13527590410569904

55. Lepaitė, D. (2003). Methodology for determining the level of study programs developing competence. Kaunas: Technologija.

56. Loo, S. (2018). Teachers and Teaching in Vocational and Professional Education. Abingdon, Oxfordshire: Routledge Ltd.

57. Maharani, L., & Damayanti, R. (2012). Social skill training : latihan keterampilan sosial pada anak usia dini yang mengalami isolasi sosial pasca bencana. In Prosiding International Seminar & Workshop Post Traumatic Counseling" Di STAIN Batusangkar Batusangkar: STAIN Batusangkar., tanggal 6-7 Juni 2012, (pp. 86–92).

58. Marder, C., Wagner, M., & Sumi, C. (2003). The social adjustment of youth with disabilities. In M. Wagner, C. Marder, J. Blackorby, R. Cameto, L. Newman, & C. Sumi (Eds.), The achievements of youth with disabilities during secondary school: A report from the National Longitudinal Transition Study–. Menlo.

59. McLaughlin C, Tarasuk V, K. N. (2003). An examination of at-home food preparation activity among low-income, food-insecure women. J Am Diet Assoc., 103(11):, 1506-12.

60. Megawati., & Ainin, I. K. (2018). KOMUNIKASI INTERPERSONAL GURU UNTUK MEMOTIVASI BELAJAR PADA ANAK BERKEBUTUHAN KHUSUS, Studi Deskriptif Manajemen Pendidikan Inklusif di SMA Negeri 10 Surabaya. UNIVERSITAS NEGERI SURABAYA FAKULTAS ILMU PENDIDIKAN JURUSAN PENDIDIKAN LUAR BIASA.

61. Melin, U., Axelsson, K., & Wedlund, T. (2009). Project-based Learning-An Emergent Framework for Designing Courses Project-based Learning - An Emergent Framework for Designing Courses. May.

62. Nair, P. K., & Fahimirad, M. (2019). A qualitative research study on the importance of life skills on undergraduate students' personal and social competencies. International Journal of Higher Education, 8(5), 71–83. https://doi.org/10.5430/ijhe.v8n5p71

63. Nanjwan, J. D. & Owojaiye, S. O. (2019). Adaptation leisure/recreational for persons with disabilities (visual impaiment). Journal of Environmental and Tourism Education (JETE), 1(2)(2 (1)), 66–71.

64. Nasution, G. R. (2013). PENGARUH PENGGUNAAN METODE COOPERATIVE LEARNING MODEL Student Team Achievement Division (STAD) TERHADAP PENINGKATAN PEMAHAMAN BELAJAR SISWA PADA MATA PELAJARAN PENGOLAHAN MAKANAN INDONESIA SISWA KELAS X JASA BOGA SMKN 1 PRAYA LOMBOK TENGAH. SKRIPSI, TUGAS AKHIR, PROGRAM STUDI PENDIDIKAN TEKNIK BOGA FAKULTAS TEKNIK UNIVERSITAS NEGERI YOGYAKARTA.

65. Nurhasanah, N., Anggarani, A., & Meria, L. (2019). Smart Using of Social Media as One of the School Literacy Facility at SMPN 191 West Jakarta. Universitas Esa Unggul Jakarta.

66. Okeke , B. C. & Obidiegwu, U. J. (2005). Vocational counselling and the status of Nigerian women: contemporary experience. Multidisciplinary Journal of Research Development (MULJORED), 6 (3), 145–152.

67. Oni, C. (2007). Development Vocational skills through Computer Literacy in Nigeria. Education & Information Technology Digital Library.

68. Pedler, M., Burgoyne, J., & Brook, C. (2005). What has action learning learned to become? Action Learning: Research and Practice, 2(1), 49–68. https://doi.org/10.1080/14767330500041251

69. Polit, D. F., & & Beck, C. T. (2006). The content validity index: are you sure you know what's being reported? Critique and recommendations. Research in Nursing & Health, 29(5), 489-497.

70. Projects, A. L., & Projects, A. L. (2015). The 7 Most Important Rules for Successful Action Learning Projects.

71. Räty, L. M. O., Kontu, E. K., & Pirttimaa, R. A. (2016). Teaching Children with Intellectual Disabilities: Analysis of Research-Based Recommendations. Journal of Education and Learning, 5(2), 318. https://doi.org/10.5539/jel.v5n2p318

72. Reason, P., Bradbury, H., Pedler, M., & Burgoyne, J. (2014). Action Learning. The SAGE Handbook of Action Research, January 1997, 319–332. https://doi.org/10.4135/9781848607934.n29

73. Reicks, M., Trofholz, A. C., Stang, J. S., & Laska, M. N. (2014). Impact of Cooking and Home Food Preparation Interventions Among Adults: Outcomes and Implications forFuture Programs. Journal of Nutrition Education and Behavior, 46(4), 259–276. https://doi.org/10.1016/j.jneb.2014.02.001

74. Ritonga, S. A., & J., dan H. E. (2016). Komunikasi Interpersonal Guru Dan Siswa Dalam Mengembangkan Bakat dan Kreativitas Anak Autis Di Slb Taman Pendidikan Islam (TPI) Medan,. Jurnal Simbolika., 2(2), 188-199. https://doi.org/http://ojs.uma.ac.id/index.php/simbolika/article/view/1030/1036

75. Santika, A. A., Anugraheny, F. S., & Alvina, Y. (2020). Dukungan Sosial Orang Tua Anak dengan Down Syndrome Social Support by Parents with Down Syndrome Children on Whatsapp Group. Perspektif, 9(2), 329–337.

76. Scott, L. A. (2018). Barriers With Implementing a Universal Design for Learning Framework. Inclusion, 6(4), 274–286. https://doi.org/10.1352/2326-6988-6.4.274

77. Shaeffer, S. (2014). Embracing diversity: toolkit for creating inclusive, learning-friendly environments; Published in 2015 by the United Nations Educational, Scientific and Cultural Organization 7, Place de Fontenoy, 75352 Paris 07 SP, France. https://doi.org/10.1017/CBO9781107415324.004

78. Short, F. (2006). Kitchen secrets: the meaning of cooking in everyday life. Oxford: Berg;

79. Short, Frances. (2003a). Domestic cooking practices and cooking skills: findings from an English study*. Food Service Technology, 3(3–4), 177–185. https://doi.org/10.1111/j.1471-5740.2003.00080.x

80. Short, Frances. (2003b). Domestic cooking skills - what are they ? J Home Econ Inst Aust., 10(3), 13–22.

81. Stone, M. K. (1985). Ralph W. Tyler's principles of curriculum, instruction and evaluation: Past influences and present effects (Doctoral dissertation). 1985.

82. Suartama, I. K., Setyosari, P., Sulthoni, & Ulfa, S. (2019). Development of an instructional design model for mobile blended learning in higher education. International Journal of Emerging Technologies in Learning, 14(16), 4–22. https://doi.org/10.3991/ijet.v14i16.10633

83. Talebi, K. (2015). John Dewey--Philosopher and Educational Reformer. Online Submission, 1(1), 1–13.

84. Tariq Bhuttah Mehmood, Xiaoduan, C., Ullah Hakim, & Bibi, & A. (2018). Curriculum Development: "An Analysis of The Tyler and Taba Model." Nort American Academic Research, 1(7), 109–118.

85. The Department of Education Tasmania. (2015). Good Teaching - Inclusive Teaching for Students with Disability. 1–5.

86. Tiwari, U. (2011). A study on work behaviour and work performance among adults with mental retardation. Unpublished M. Phil Dissertation. Osmania University, Hyderabad.

87. Undang-undang RI Nomor 20. (2003). Undang-undang Republik Indonesia Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional,. [Online]. Retrieved from: Http://Www.Geocities,Com/Frans_98/Uu/Uu_20_03.Htm. Accesed on April 10th 2008.

88. Utomo, U. (2013). Analisis Kebutuhan Guru Seni Musik Dalam Konteks Pelaksanaan Pembelajaran Berbasis Action Learning Di Sekolah. Harmonia - Journal of Arts Research and Education, 13(2), 110–119. https://doi.org/10.15294/harmonia.v13i2.2777

89. Vanitha, C. (2017). Different levels of Vocational competency among Students with Mild Intellectual Disabilities. 4(11).

90. Vaughn, S., Hogan, A. (1990). Social competence and learning disabilities: A Prospective Study. In H. L. Swanson, B. K. Keogh (Eds.), Learning Disabilities: Hillsdale, NJ: Erlbaum., Theoretical and Research Issues, 175–191.

91. Wagner, M. (2005). The leisure activities, social involvement, and citizenship of youth with disabilities after high school. In M. Wagner, L. Newman, R. Cameto, N. Garza, & P. Levine (Eds.), After high school: A first look at the early postschool experiences of youth with d. A Report from the National Longitudinal Transition Study–2 (NLTS2) (Pp. 7/1–7/26). Menlo Park, CA: SRI International.

92. Welskop, W. (2014). Wojciech Welskop. January. https://doi.org/10.13140/RG.2.1.4513.8006

93. Westbrook, R. (1993). John Dewey: 1859–1952. Prospects, 23(1–2), 277–291. https://doi.org/10.1007/BF02195040

94. Whitaker, S. (2008). Intellectual disability: A concept in need of revision? British Journal of Developmental Disabilities, 54(1), 3–9. https://doi.org/10.1179/096979508799103350

95. WHO. (1997). World Health Organization-Life skills education in schools. World Health, 132–148.

96. Williams, M. (2017). John Dewey in the 21st Century. Journal of Inquiry and Action in Education, 9(1), 91–102.

97. Yonjoo Cho. (2013). What is Action Learning? Components, Types, Processes, Issues, and Research Agendas Yonjoo Cho, Indiana University. 1(4), 1–11.

98. Zins, J. E., Elias, M. J., Weissberg, R. P., Greenberg, M. T., Haynes, N. M., Frey, K. S., et al. (1998). Enhancing learning through social and emotional education. Think: The Journal of Creative and Critical Thinking, 9(Retrieved August 29, 2003,), 18-20.