

# Improving Student Competencies Through Work-Based Learning Model Group Investigation in Vocational Education

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## Abstract

*This study aimed to analyze the conditions of learning in Diploma III vocational education and the influence of the Group Investigation-based Work-Based Learning model on nursing diploma III vocational education. This type of research is a type of qualitative research. This research describes or describes an actual problem, and from these results, it can be concluded or generalized. This research approach is a descriptive approach, which is an approach that aims to make systematic, accurate, and factual descriptions of populations and certain objects. The population of this study was students of nursing Diploma III vocational education. The data collection technique was carried out by observing learning, then followed by interviews. Data analysis in qualitative descriptive research is a gradual progression flow, assigning informants to writing reports. After going through observations and interviews, the study results indicate that applying the Work-Based Learning and Group Investigation models is very relevant in implementing nursing vocational education and positively influences student competency abilities. This finding will have implications to improve students' competence in vocational education. The Work-Based Learning model based on Group Investigation can create a learning atmosphere in vocational education.*

**Keywords:** Work-Based Learning (WBL) Model, Group Investigation, Vocational Education

## 1. Introduction

Nurse's competence is everything that must be displayed thoroughly by a nurse in providing professional services to clients, including the knowledge, skills, and considerations required in practical situations (Iswati, 2015; Shrestha & Jose, 2014). Competency testing is the process of measuring students' knowledge, skills, and behavior in universities that organize nursing study programs. All nursing students, both D3 students at the end of their study period, must take the national competency test. The competency test aims to achieve graduates' competency standards that meet work competency standards (Masfuri, 2012; Safadi et al., 2011; Sari, 2015). Indonesia's nursing education problem is that nursing education's establishment and implementation are still not clear. Hence, there are many nursing education institutions whose quality is still in doubt. There is still no standardization in implementing competency tests, so the results achieved also vary in quality. The education gap does not affect nurses' competence, recognition, and welfare in the workplace in providing nursing care (Safadi et al., 2011; Shrestha & Jose, 2014).

Students have insufficient knowledge about patient safety, including the process of identifying patients correctly by 32%, effective communication by 61%, increasing the correct medication by 59%, ensuring correct location, procedures, and patients by 74%, reducing the risk of infection was 86%. The risk of falling was 43% (Iswati, 2015). Another study showed that students' knowledge of patient safety was far from 100% (Safadi et al., 2011). The impact of the lack of student competence regarding patient safety will lead to patient safety incidents, such as giving the wrong patient medication, the patient falling out of bed doing actions that are not following the procedure, and so on (Iswati, 2015; Safadi et al., 2011). This problem also occurs in students of the vocational nursing education program, Universitas Duta Bangsa (UDB) Surakarta students. The lack of competency attainment by students is the Indonesian Nurse Competence Examination (UKNI). The average UKNI

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passing rate is still very low. Universitas Duta Bangsa (UDB) Surakarta graduates resulted in only 55.56% declared competent. Various efforts made so that nurses (nursing) graduates are competent are by training in item development for nursing lecturers, but the results have not been optimal. Based on data from researchers of DIII nursing students at Duta Bangsa University (UDB) Surakarta while practicing at PKU Muhammadiyah Surakarta Hospital, PKU Muhammadiyah Delanggu Hospital Nirmalasuri Sukoharjo Hospital, it found that out of 36 students, around 55% experienced difficulties in practice. Students' difficulties include weakness in nurses' ability to handle complaints or disease responses, nurses' explanations for perceived complaints, less professional handling of care problems, and communication between nurses and patients, causing dissatisfaction with service and care. Students still focus on physical problems only, even though the treated patient has other problems. For example, the patient treated is conscious and has problems related to verbal communication disorders. Clinical supervisors also stated that the achievement of student competencies was still not optimal.

Suggestions given to nursing students can improve competence regarding the implementation of patient safety goals, educational institutions can evaluate the competence of nursing students, and hospitals can measure the competence of students who will practice in the hospital and the need to develop learning models that can encourage student learning activeness and independence which in the end can improve the competence of nursing students (Ashktorab et al., 2015; Iswati, 2015). The partnership relationship between vocational education institutions and the world of work in the implementation of learning is one way for the institution to reconfigure its resources while at the same time utilizing the various competencies of other parties. Through this partnership, educational institutions take advantage of the competence of outsiders and gain new capabilities so that it is difficult to limit and at the same time neutralize the rigidity of internal processes, which in turn becomes more flexible. Such conditions are certainly the dream of Diploma III vocational education providers that organize educational programs with workplace-based teaching and learning that try to bring education closer to the world of work. Its form is workplace-oriented teaching and learning or Work-Based Learning.

The Work-Based Learning (WBL) implementation program development is still wide open with the current industrial developments (Sudjimat & Permadi, 2019; Wall et al., 2017). Vocational education institutions must be able to establish mutually beneficial cooperation. Industrial Practice in the Diploma III program is one of the field courses intended to equip students to have work experience in the industry to develop their vocational knowledge and skills and empower students in study responsibilities and future careers (Nugroho & Isnaeni, 2017; Siswanto, 2012a). Purpose of Industrial Practice so that students can add insight into science and technology through fieldwork activities in industries/companies according to their fields of expertise. The application of Work-Based Learning (WBL) in vocational education in the world has been around for a long time, both at the secondary and tertiary education levels (Siswanto, 2012b; Wright et al., 2010). The partnership between vocational education institutions and industry in implementing learning is a necessity. Vocational education institutions can organize not only school-based learning but also must work-based learning (work-based learning). It is done because vocational education institutions prioritize the preparation of graduates for work (Battistelli et al., 2019; Wright et al., 2010).

In addition to using Work-Based Learning (WBL) approaches in vocational education, many cooperative learning methods are used (Wall, 2017). Students are involved in planning the topics studied and how the investigations are carried out in the Group Investigation learning model (Adora, 2014; Retno et al., 2014). Students are trained to think scientifically in dealing with problems and trying to solve them. Lecturers act as facilitators in guiding students to complete material or assignments. Group Investigation implementation's success is highly dependent on communication training and various other social skills that have been done before (Sojayapan & Khlaisang, 2020). This model develops intellectual abilities and all existing potential, including emotional development and skills development. The application of the Work-Based Learning (WBL) learning model will train students to dare to express opinions, work together, develop themselves, and be individually responsible, positive

interdependence, personal interaction, and group processes (Bello, 2011). Using the learning model effectively and efficiently will reduce lecturers' monopoly in mastering the learning process (Kazeni et al., 2018). The boredom of students in receiving lessons reduced. Therefore, this study describes learning in Vocational Diploma III Nursing education and applying the Group Investigation-based Work-Based Learning (WBL) learning model to improve vocational education Diploma III Nursing students' competence.

Research on work-based learning models was also conducted before. Research that shows that the work-based learning model is suitable for vocational education because it can train students' professional attitudes, train mental readiness for work, and student independence in the model increased significantly higher than in conventional class (Siswanto, 2012b, 2012a). Then research on group investigation has also been done a lot. One of the studies shows that the group investigation model has increased students' activity and improved students' learning outcomes or cognitive competence (Retno et al., 2014; Wicaksono et al., 2017). If these two models are combined, they will be balanced and complementary. In performance-based learning, it takes a good way to work and solve problems in a group. The Group Investigation-based Work-based learning model will increase the competence of vocational students. This study aims to determine the conditions of learning in vocational education Diploma III and the influence of the Group Investigation-based Work-Based Learning model on vocational education diploma III nursing.

## 2. Method

This research was qualitative. This research describes an actual problem, and from these results, it can be concluded or generalized. This research approach is a descriptive approach, which is an approach that aims to make systematic, accurate, and factual descriptions of populations and certain objects. Researchers usually already have a concept and a framework (Bungin, 2011; Kriyantono, 2005). The population of this study was students of nursing Diploma III vocational education. Several data collection methods are used in qualitative research, participatory observation, in-depth interviews, life history investigations, and document analysis (Sugiyono, 2017). The data collection technique is carried out by observing learning, then completing it with the interview results to describe which views are the same and which views are different, then conclusions can be drawn in this study. Regarding the validity of the data, the researcher's steps were formulated to obtain reliable data. The validity of the research data carried out using data triangulation. Researchers use triangulation as a technique to check the validity of data. In that sense, triangulation is a technique of checking the validity of data that utilizes something else in comparing the results of interviews with the object of research (Moleong, 2012). In this study, of the four triangulation types, researchers only used inspection techniques by utilizing sources. Triangulation with sources means comparing and cross-checking the degree of confidence of information obtained through different time and qualitative research tools. In triangulation of sources, the researcher compared the results of observations, interviews, and document analysis. Data analysis in qualitative descriptive research is a gradual progression, assigning informants to writing reports (Moleong, 2012). The process of qualitative data analysis began with making field notes in the form of short reports. The next step is to conduct in-depth interviews with participants and make transcripts of the interviews' results. Furthermore, the researchers carefully read the interview transcripts for data reduction. Researchers reduce data by making abstractions, taking, and recording useful information following the research context. The abstracts that are made are grouped based on the taxonomy of the research domain. Research acquires this domain by doing big questions and small questions that can deepen the big questions. This domain is important for researchers because it is a basis for further research

### 3. Result and Discussion

#### Results

The learning conditions in nursing diploma III vocational education, especially in the implementation of Diploma III higher education in a workplace-based learning approach, has many variations and models. In Surakarta, there are nursing vocational education institutions, one of which is Duta Bangsa University (UDB). UDB Surakarta applies a method or model called Production Based Education and Training in the real world of health, emphasizing market-oriented products. Students study and participate in working directly in hospitals, polyclinics. A continuous flow of market demand captured through hospital units, polyclinics, and translated into teaching and training will ensure vocational education continuity. Proof that the applied education system is successful or not is given back to the market. Suppose the nursing staff educated by the UDB Surakarta answers the needs automatically. In that case, these workers can always be absorbed and are always asked by the health industry.

UDB Surakarta is developing a health activity unit in collaboration with clinics and hospitals around the Surakarta area. The Nursing Study Program at the UDB implements a Work-Based Learning approach in collaboration with public and private hospitals (RS) in the Surakarta area as well as with health clinics. Students of the Nursing Study Program (Prodi) at the UDB can carry out nursing practice activities at these hospitals and clinics to get direct experience in the world of work. Since 2003, the D-III Nursing Study Program at UDB has implemented a superior class program where one excellent class from the results of the selection of non-regular students is placed in health work partners (in clinics, polyclinics, joint clinic, hospitals) for 1 (one) semester fully to carry out the Health Practice program (nursing and pharmacy) to carry out the health practice program (medical attachment/fieldwork practice) and also lectures with instructors from professional health practitioners. Curriculum planning, learning process, mentoring, mentoring, provision of field instructors, training methodologies, learning evaluations are arranged jointly between the two parties. The field supervisor/instructor has also been trained in the learning process, training methods and evaluation, industry experience, and evaluation methods.

Various applications of models and good practices of learning and implementing vocational education Diploma III in Nursing with the Work-Based Learning approach have not been satisfactory. Apart from being very casuistic, the D-III health administrators (nurses and pharmacy). Limited access to health jobs, human resources, funding sources, facilities, quality of industry advisors, location, and so on. Suppose these limitations are resolved, and implementing a health experience program can be carried out jointly and integrated by utilizing both parties' capabilities. In that case, the quality of the health experience (Nursing and Pharmacy) of 15 students will be better, and then the quality of Diploma III Nursing and Pharmacy graduates can improve. It is necessary to develop strategies and teaching methods that encourage students to be more active in mastering the material and have nursing skills. UDB Surakarta has developed a health activity unit in collaboration with clinics and hospitals around the Surakarta area to create a real health industry situation. The Nursing Study Program (Prodi) of UDB implements a Work-Based Learning approach in collaboration with public and private hospitals (RS) in the Surakarta area as well as with health clinics. Students of the Nursing Study Program (Prodi) of the UDB can carry out nursing practice activities at these hospitals and clinics to get direct experience in the world of work.

Nursing graduates can work and have careers as nursing experts, health experts, nursing/health researchers, nursing/health educators or extension agents, or health service administrators in government or private agencies (hospitals, health centers, polyclinics, departments/central health services, or Region, etc.). Students participate in integrated education and training, including basic mental medicine, basic medicine, and advanced technology regarding general health care and special health care combined with the On-the-Job Training program at polyclinics and clinics, both public and private Surakarta area.

Students for 3 years of education besides getting theoretical and practical training on campus, are also placed in polyclinics, hospitals, and work partners to carry out regular on-the-job training (OJT) at levels I, II, III with a certain duration for a total the accumulated duration of OJT is up to 9-12 months. With this OJT, students will gain competence as intermediate experts in nurses and pharmaceutical assistants who are complete in the realities of the health services business in nursing and pharmacy. More or less, the same model is applied to trainees at the BLK Health Education and Training Center. They are engaged in distributing health services in nurses and pharmacy at Duta Bangsa University (UDB). Since 2003, the D-III Nursing Study Program at UDB has implemented a superior class program where one excellent class from the results of the selection of non-regular students is placed in health work partners (in clinics, polyclinics, joint clinics, hospitals) for 1 (one) semester fully to carry out the Health Practice program (nursing and pharmacy) to carry out the health practice program (medical attachment/fieldwork practice) and also lectures with instructors from professional health practitioners. Curriculum planning, learning process, mentoring, mentoring, provision of field instructors, training methodologies, learning evaluations are arranged jointly between the two parties. The field supervisor/instructor has also been trained in the learning process, training methods and evaluation, industry experience, and evaluation methods.

The quality of the nursing Diploma III vocational education results, both in terms of process and product, is strongly influenced by the learning approach used in providing vocational education. The implementation of vocational education is less meaningful without cooperation with the business world and the industrial world. The application of the Work-Based Learning and Group Investigation models becomes very relevant in implementing nursing vocational education. Furthermore, it is necessary to develop a model for vocational education to improve learning outcomes, affecting the quality of learning outcomes and graduates' quality. The improvement of the learning model is pursued thoroughly regarding models (practical/can be implemented by all D-III Nursing, systems (integrated), facilities (man, material, machine, management, money, methods can be provided by the service industry/users of nursing health), capabilities (outsourcing from users' services and can be accessed through the CSR program).

## Discussion

Implementing Diploma III higher education in a workplace-based learning approach has quite a lot of variations and models. In Surakarta, there are nursing vocational education institutions, one of which is the UDB. UDB Surakarta applies a method or model called Production Based Education and Training in the real world of health, emphasizing market-oriented products. Students study and participate in working directly in hospitals, polyclinics. A continuous flow of market demand captured through hospital units, polyclinics, and translated into teaching and training will ensure vocational education continuity. Proof that the applied education system is successful or not is given back to the market. If the nursing staff educated by the UDB Surakarta answers the needs, automatically these workers can always be absorbed and are always asked by the health industry. UDB Surakarta is developing a health activity unit in collaboration with clinics and hospitals around the Surakarta area. The Nursing Study Program at the UDB implements a Work-Based Learning approach in collaboration with public and private hospitals (RS) in the Surakarta area as well as with health clinics. Students of the Nursing Study Program (Prodi) at the UDB can carry out nursing practice activities at these hospitals and clinics to get direct experience in the world of work. Work Based-Learning is a learning model that utilizes the workplace to structure experiences gained and contribute to the social, academic, and career development of learners and can be a supplement in learning activities (Siswanto, 2012a, 2012b).

Various applications of models and good practices of learning and implementing vocational education Diploma III in Nursing with the Work-Based Learning approach have not been satisfactory. Apart from being very casuistic, the DIII health administrators (nurses and pharmacy). Limited access to health jobs, human resources, funding sources, facilities,

quality of industry advisors, location, and so on. Suppose these limitations are resolved, and implementing a health experience program can be carried out jointly and integrated by utilizing both parties' capabilities. In that case, the quality of the health experience (Nursing and Pharmacy) of 15 students will be better, and then the quality of Diploma III Nursing and Pharmacy graduates can improve. It is necessary to develop strategies and teaching methods that encourage students to be more active in mastering the material and have nursing skills (Roberts, 2008; Sudjimat & Permadi, 2019).

Adopting the Group Investigation-based Work-Based Learning model in vocational education at the higher education level in Indonesia has been going on for a long time. According to Guide (2002), WBL is a planned and supervised connection of classroom experiences with workplace realities and expectations (Siswanto, 2012a; Wright et al., 2010). Work-based learning model, which is a continuum starting from classroom lectures to competitive placement. The process takes the form of a cycle from classroom lecture - informal interview - industry tour - job visit - entry-level work experience - on the job (OTJ) training - approved apprenticeship program - competitive employment. At the same time, the Group Investigation (GI) learning model is a learning model that involves students actively seeking knowledge through investigations or investigations and searching for information related to the material being studied (Rahmatiah & Kusairi, 2017). The GI learning model application can help students develop their ability to understand new knowledge through direct learning experiences in groups.

The GI-based WBL model is implemented in the following steps: (1) identifying topics and dividing students into groups, (2) planning tasks in LKPD, (3) conducting investigations by gathering information, (4) preparing final assignments through the presentation of investigation results, (5) formulating conclusions, and (5) evaluation by reflecting on learning outcomes. In the preliminary stage, the lecturer performs apperception by motivating and exploring students' initial knowledge through questions related to the material. Furthermore, the lecturer divides students into several groups in this activity, where each group consists of 5 - 6 students. The division of groups is carried out heterogeneously based on the abilities of students. Each group was given an LKPD (Student Worksheet), and the lecturer provides directions in group work. Each group was allowed to investigate by searching for information from various learning sources related to problems in the LKPD. The problems presented in the LKPD are contextual in the sense that they are material that students often encounter daily. Contextual learning is learning when the lecturer brings the real world into the classroom and encourages students to make connections between the knowledge they have and its application in everyday life (Nurhadi et al., 2004; Wicaksono et al., 2017).

UDB Surakarta applies the Production Based Education and Training method in the real world of health, emphasizing market-oriented products. Students study and participate in working directly in hospitals, polyclinics. A continuous flow of market demand captured through hospital units, polyclinics, and translated into teaching and training will ensure vocational education continuity. Proof that the applied education system is successful or not is given back to the market. If the nursing staff educated by the UDB Surakarta answers the needs, automatically these workers can always be absorbed and are always asked by the health industry. The challenge in the future is that cooperation is necessary with the health industry itself, which should be directly involved in education. Provision of adequate facilities can be expected from the industrial world. UDB Surakarta is developing a health activity unit in collaboration with clinics and hospitals around the Surakarta area. The Nursing Study Program at the UDB implements a Work-Based Learning approach in collaboration with public and private hospitals in the Surakarta area as well as with health clinics. Students of the Nursing Study Program at the UDB can carry out nursing practice activities at these hospitals and clinics to get direct experience in the world of work. It is following the opinion argues that the success of students in clinical learning is influenced by several things including clinical counselors, the clinical guidance process, the methods used in guidance, completeness of the facilities and finally the client and family cooperation during the student's implementation (Fitriani & Hartono, 2012). So far, the implementation of clinical learning activities in Indonesia still needs special attention because there are still many problems that

occur in the clinical environment related to hospital policies, such as the research at a public hospital in Banjarmasin stated that the management of inpatient rooms was not good (Sukesji, 2017). In the implementation of the student, practice to affect the achievement of student competence.

The quality of the nursing Diploma III vocational education results, both in terms of process and product, is strongly influenced by the learning approach used in providing vocational education. The implementation of vocational education is less meaningful without cooperation with the business world and the industrial world. The application of the Work-Based Learning and Group Investigation models becomes very relevant in implementing nursing vocational education. Furthermore, it is necessary to develop a model for vocational education to improve learning outcomes, affecting the quality of learning outcomes and graduates' quality. The improvement of the learning model is pursued thoroughly regarding models (practical can be implemented by all DIII Nursing, systems (integrated), facilities (man, material, machine, management, money, methods can be provided by the service industry/nursing health users), capabilities (outsourcing from users' services and can be accessed through the CSR program.) In implementing WBL-based vocational education, strategy-tactics-methods are needed (Arends, 2008; Cunningham et al., 2004).

Similar research shows that students who taught using the Work-Based Learning model have much higher achievement than students who taught using the TWI model (Sudjimat & Permadi, 2019). The knowledge possessed by students has also increased considerably compared to before. The findings indicate that the WBL model can improve vocational education learning outcomes, especially in increasing student achievement motivation, compared to traditional learning using the TWI model. Further research shows a higher frequency of student participation during the teaching and learning process applying the Work-Based Learning method (Nugroho & Isnaeni, 2017). So it can be concluded that the Work-Based Learning model positively impacts student participation in the entrepreneurship class. Then, another research also carried out supporting research, which showed a positive effect (Fitriani & Hartono, 2012). This positive influence can occur because of the process skills that arise, and the emergence of students' positive entrepreneurial values towards mathematics, the abilities possessed by students also develop.

From some of the results carried out, it can be concluded that the Work-Based Learning model has a positive effect if it is applied to learning activities. However, this research update integrated with Group Investigation. Group investigation emphasizes the learning process, requiring students to actively participate in the learning process by digging/looking for information/material to be studied independently with available materials (Wicaksono et al., 2017). The advantages of this group investigation are that it can train students to socialize, solve problems, learn to be democratic in unifying understanding of the material, and practice constructing an understanding of material concepts (Retno et al., 2014). So that if it is integrated with the work-based learning model, it will be carried out well because, in work-based learning, the ability to discuss and solve problems in a group is also very influential. The development of a Group Investigation-based Work-Based Learning model hoped to improve nursing Diploma III vocational education students' competence. The role of the Nursing Diploma III program, which prepares executive personnel with graduate quality following the job market, is interesting to study with various models of learning implementation in the context of partnerships with industry. The WBL implementation model in vocational education Diploma III in nursing is studied to improve competence, learning outcomes, and graduates' quality with various factors. This finding will have implications to improve students' competence in vocational education. The Work-Based Learning model based on Group Investigation can create a learning atmosphere in vocational education

#### 4. Conclusions and Suggestions

The Group Investigation-based Work-Based Learning (WBL) learning model's success is determined by several interrelated factors: students, supervisors, facilities, and

others. The preparation of a Group Investigation-based Work-Based Learning (WBL) learning model manual is an effort to ensure that there is a standard reference in the implementation of Group Investigation-based Work-Based Learning (WBL) learning models with a defined approach (including strategy-method-tactics). Various WBL models, specifically for implementing WBL vocational education (Diploma III), are adjusted to the field's characteristics and substance.

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