



# The First International Conference on Neuroscience and Learning Technology (ICONSATIN 2021)

Online, January 18 - 19 September 2021  
Editor: Anand Kumar and Pooja Singh



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**Dr. Ridho Alfarisi**

Editor in Chief of International Conference on Neuroscience and Learning Technology 2021

E-mail: [alfarisi.fkip@unej.ac.id](mailto:alfarisi.fkip@unej.ac.id)

We would like to express our gratitude to all participant who were joining “The First International Conference on Neuroscience and Learning Technology 2021 (ICONSATIN)”. It is the first International conference held by the Department of Education, FKIP-University of Jember on 18-19 September 2021. The conference is held to welcome participants from many countries, with broad and diverse research interests on physics, science, technology, engineering, mathematics, neuroscience and learning technology. The mission is to become an annual international forum in the future, where, civil society organization and representative, research students, academics and researchers, scholars, scientist, teachers and practitioners from all over the world could meet in and exchange an idea to share and to discuss theoretical and practical knowledge on those topics. The aim of the first international conference is to present and discuss the latest research that contributes to the sharing of new theoretical, methodological and empirical knowledge and a better understanding in the area of physics, science, technology, engineering, mathematics, neuroscience and learning technology.

The participants of ICONSATIN 2021 were 126 participants consisting research students, academics and researchers, scholars, scientist, teachers and practitioners from many countries. The selected papers to be published on AIP Conference Proceedings are 86 papers.

On behalf of the organizing committee, finally we gratefully acknowledge the support from the University of Jember of this conference. We would also like to extend our thanks to all lovely participants who have been joining this unforgettable and valuable event.

Dr. Ridho Alfarisi

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Arief Tukiman Hendrawijaya<sup>1, a)</sup>, Muhammad Irfan Hilmi<sup>1, b)</sup>, Fuad Hasan<sup>1, c)</sup>,  
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**Abstract.** This research aims to analyze and examine the direct effect of competence, partnership, teamwork, and innovation on leadership; to analyze and examine the direct effect of competence, partnership, teamwork, innovation, and leadership on community education; and to analyze and examine the indirect effect of competence, partnership, teamwork, and innovation on community education with leadership as mediation. The research type is cross sectional survey with quantitative approach. The research samples were 160 participants of Package C Study Group, Bondowoso Regency. Data collection methods were online questionnaire, observation, and documentation as primary data. Data analysis method applied path analysis to determine the direct effect and indirect effect. The research results showed that competence, partnership, teamwork, and innovation had a significant positive effect on leadership. Furthermore, competence, partnership, teamwork, innovation, and leadership had a significant positive effect on community education. Meanwhile, leadership was able to mediate the effect of competence, partnership, teamwork, and innovation on community education.

## INTRODUCTION

Quality human resources have to be improved continuously in line with the advancement of science and technology. The improvement of Indonesia's human resources is important because human resources are one of the fundamental national assets and a determining factor in national development efforts in Indonesia. Human resource development will be valuable if it has excellent competence, and an organization can be successful if it has a sustainable competitive advantage. Gaining the advantage will encourage human resources in the organization to reach a position which is a major component, more than any other organization has [1].

Human resource management strategy is to link human resource management with strategic roles and objectives in order to improve business performance and develop organizational culture and encourage innovation and flexibility, so it seems that organizational leaders must link the application of human resource management with organizational strategies to improve performance and develop organizational culture that will support the application of innovation and flexibility [2]. One of the strategies to develop human resources is education, especially community education.

Community education or better known as out-of-school education is one type of non-formal education. Its existence emerges from the concept of lifelong education, in which its implementation focuses on certain skills or expertise in the community [3]. In order to make it happen, continuous learning is needed. Lifelong learning underlies the professions in community education which lead to activities to teach the community. Suzanna Kindervatter defines community education as a method of applying the needs, interests of adults and young people dropping out of school in developing countries, helping, and motivating them to acquire skills to adjust patterns of behavior and activities that will increase productivity and improve living standards [4]. Furthermore, community

education is an approach that aims to provide understanding and awareness to a person or group in order to understand and control socio-economic and political forces in order to improve their position in society.

Community education is defined as a path of education that can be chosen by some people, apart from formal education. Community education with a flexible learning nature, oriented to market needs and life skills-based community, has the ability to penetrate all levels of society. Therefore, the initiated community of education program must have clear objectives and orientation, so that its existence is able to increase knowledge, skills, professionalism, productivity, and community competitiveness in seizing markets and business opportunities, which in turn enable the community to overcome these challenges. The problems faced nowadays in the society are poverty and unemployment. Indeed, the challenges in managing community education programs in the future are getting bigger. To answer these challenges requires competence, partnership, teamwork, and innovation from the components that support it.

Competence is a term commonly used for the assessment of people's work potential in real activities [5]. Competence is a collection of knowledge, attitudes, skills and other personal characteristics that affect the main part of a person's job and correlate with workplace performance can be measured against well-accepted standards [6]. Partnership in education is a key to the successful management of learning today. It can be said that the current era is an era of partnership and collaboration, where each institution must strengthen itself with its partners. The size of the strength of an institution is not determined by its internal strength, but rather by the strength of its relationships [7]. In this case, teamwork is a group of people who work together actively to achieve common goals and are willing to work to ensure that the goals will be achieved [8]. The perspective that becomes the basis of a teamwork is that all team members have high qualifications. Open interactions that help each other in the team to communicate effectively to motivate each other [9]. In addition, leadership is never separated from team motivation and is associated with long-lasting motivation of team members. Innovation and leadership are important factors in achieving the sustainable profitability that a company desires. The relationship between these variables is one of the keys to organizational success. The results of research in Portuguese hospitality sector found a relationship between innovation and leadership [10].

The improvement of human resources in an effort to form a good community education requires competence, partnership, teamwork, and innovation from its supporting components and must be supported by the leader. This becomes interesting to research and study further about the effect of competence, partnership, teamwork, and innovation on community education, either directly or indirectly, with leadership as mediation.

## **LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

### **Relationship of Competence, Partnership, Teamwork, and Innovation towards Leadership**

In an increasingly globalized world, even the most competent leaders can face failure if the teamwork they lead fails to meet its goals. Teamwork becomes out of control without leadership. Teamwork and leadership are like two sides of a coin that cannot exist without each other. They must be balanced, coordinated and synergized for optimal organizational performance towards successful results [11]. It is often found that the failure of teamwork is caused by leadership. In every performance the leadership role contributes to collective success. This means that the cause of teamwork failure is not only due to the members' inability but also the mutual failure to coordinate and synchronize individual contributions to teamwork [12].

Nowadays, the idea of supportive, collaborative and participatory leadership is more likely to encourage innovation in an organization [13]. Leadership will be able to create ideal conditions for innovation by bringing together a team of innovative people, promoting mutual trust, taking risks, minimizing the cost of internal communication or a shared vision [14; 15, 16] among members of the organization.

Wong [17] found that partnership relates to leadership and has an important role in making long-term orientation effective. Yun et al. [18] found that teamwork has a negative relationship with leadership, while teamwork has a positive relationship with leadership. Sethibe and Steyn [19] found that innovation is positively and significantly related to leadership, while Leitão et al., [10] in their research found that without good development and implementation of innovation and leadership, it is very unlikely that the company will succeed. The hypotheses proposed based on the descriptions above are stated below:

H<sub>1</sub>: Competence has a positive effect on leadership.

H<sub>2</sub>: Partnership has a positive effect on leadership.

H<sub>3</sub>: Teamwork has a positive effect on leadership.

H4: Innovation has a positive effect on leadership.

## **Relationship of Competence, Partnership, Teamwork, Innovation, and Leadership toward Community Education**

Competence is a term commonly used for people's assessment of their work potential in real activities [5]. Competence is a collection of knowledge, attitudes, skills and other personal characteristics that affect the main part of a person's job. It correlates with workplace performance and can be measured against well-accepted standards [6]. Komar's [20] research results found that competence is related to community education.

When employees work as a team, they will automatically learn from each other. By working with different departments, employees develop skills to walk in the positions of other employees. According to Alkhodary [21], working with employees from other departments brings in-depth knowledge of how the department works. It will not happen if the company does not apply teamwork as a priority.

One indicator of the success of community education is a competitive advantage that allows achieving superior performance. Rosenbusch et al. [22] that businesses with strong innovation capabilities will gain a competitive advantage in achieving superior performance. A number of studies on the effect of innovation on community education in small and medium enterprises have been carried out in several countries. Sok et al. [23] conducted research in Cambodia, Ndubisi and Agarwal [24] in Pakistan, Thakur and Hale [25] in the United States and India and Iscan et al. [26] in Turkey. The hypotheses proposed based on the description above are as follows:

H5: Competence has a positive effect on community education.

H6: Partnership has a positive effect on community education.

H7: Teamwork has a positive effect on community education.

H8: Innovation has a positive effect on community education.

H9: Leadership has a positive effect on community education.

## **Relationship of Competence, Partnership, Teamwork, Innovation in Community Education with Leadership as Mediation**

Community education as a source of learning for the community must be seen as a supporting capacity for the realization and management of programs and is used as program development in the future. Meanwhile, the role of the community as a target can be seen at the level of community participation in participating in various programs related to development of skills, abilities and quality in order to improve social welfare of the poor in the area. A developing country must use community education not only to develop the previous formal education of a small proportion of its citizens, but more specifically to increase the economic and social level of its most citizens [27].

Community education provides a positive impact on the condition of the family (poor, vulnerable and marginalized) and the excluded, especially women. The location of residence can affect a person in carrying out activities because living in a remote place make someone find it more difficult to get information about programs launched by the government in relation to improving the quality of life [28]. Community education is an educational program nonformal schools. It includes all levels of society which are not limited to age, gender, socioeconomic status and previous education level. Its target not only prioritizes those who have never attended school, dropped out of school, or those who have graduated from school and want to get a job, but also serves all levels of people without exception including those who already have a high level of education or even a permanent job. In other words, the target of community education is those who need additional knowledge and skills to improve themselves to the principle of lifelong education [3]. The hypotheses proposed based on the description above are:

H10: Competence has a positive effect on community education with leadership as mediation.

H11: Partnership has a positive effect on community education with leadership as mediation.

H12: The teamwork has a positive effect on community education with leadership as mediation.

H13: Innovation has a positive effect on community education with leadership as mediation.

Based on the literature review and hypotheses development above, the conceptual framework in this study is presented in the following figure:

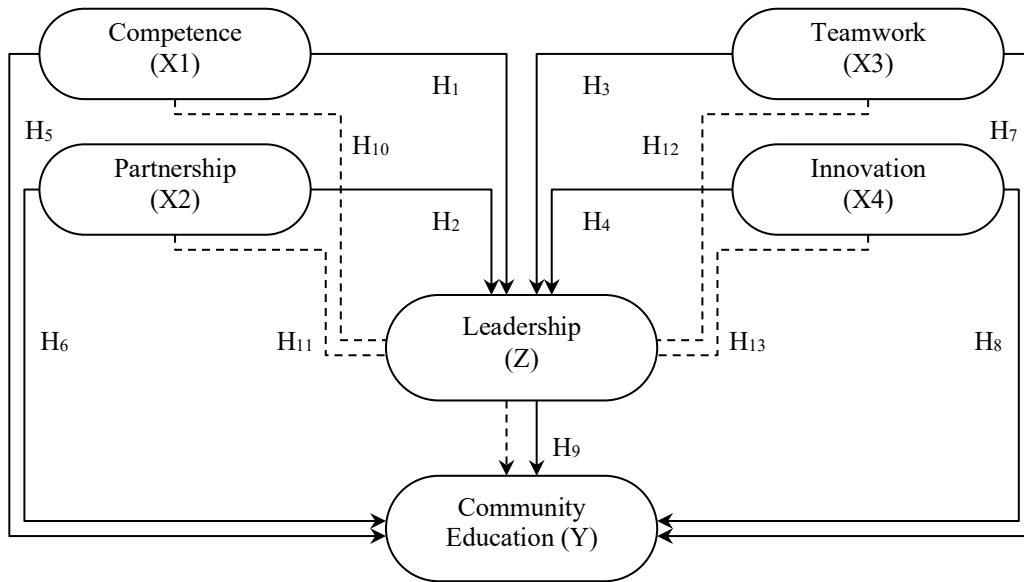


FIGURE 1. Conceptual Framework

## RESEARCH METHOD

The type of this research is a cross sectional survey [30]. The research used quantitative approach [31]. The population in this study was the tutors for the Package C Study Group in Bondowoso Regency, amounting to 1,673 people. The sampling technique applied Slovin formula with a tolerance of 10% [32] and determined 160 respondents. The main data in this study were collected using online observation and questionnaires. Data collection by filling out questionnaires was carried out in January 2021. This study used path analysis because of its advantage to test the direct and indirect effects [33]. The calculation of path analysis in this study used AMOS computer program, which aimed to determine the direct effect of exogenous variables (competence, partnership, work team, innovation) on endogenous variables (leadership and community education) as well as indirect effects with the mediating variable (leadership).

## RESULTS AND DISCUSSION

### Respondent Data

The total number of respondents in the study was 160 people who were tutors for the Package C Study Group in Bondowoso Regency. Respondent characteristics data include gender, age, latest education and years of service. An overview of each of the characteristics of the respondent is presented in Table 1.

TABLE 1. Characteristics of Respondents

Characteristics	Description	Distribution	
		Frequency	Percentage (%)
Gender	Male	52	32.5
	Female	108	67.5
Age	25-35 years	63	39.4
	36-45 years	78	48.8
	46-60 years	19	11.9
Latest education	Senior High School	31	19.4
	Diploma	83	51.9
	Bachelor	39	24.4
	Master's	7	4.4

Characteristics	Description	Distribution	
		Frequency	Percentage (%)
Total		160	100

The characteristics of the respondents in this study indicate that most of the research respondents are female (67.5%), aged between 36-45 years (48.8%) and have the latest diploma level education (51.9%).

### Path Analysis

The results of calculating the direct effect of exogenous variables (competence, partnership, teamwork and innovation) on endogenous variables (leadership and community education) are presented in Table 2.

**TABLE 2.** Hypothesis Testing of Direct Effect

Hyphotheses	Regression Model	Direct Effect	Critical Ratio	Sig.
H <sub>1</sub>	Competence (X <sub>1</sub> ) → Leadership (Z)	0.174	2.716	0.007 **
H <sub>2</sub>	Partnership (X <sub>2</sub> ) → Leadership (Z)	0.201	3.370	0.000 **
H <sub>3</sub>	Teamwork (X <sub>3</sub> ) → Leadership (Z)	0.171	2.488	0.013 *
H <sub>4</sub>	Innovation (X <sub>4</sub> ) → Leadership (Z)	0.277	4.142	0.000 **
H <sub>5</sub>	Competence (X <sub>1</sub> ) → Community education (Y)	0.241	3.851	0.000 **
H <sub>6</sub>	Partnership (X <sub>2</sub> ) → Community education (Y)	0.126	2.145	0.032 *
H <sub>7</sub>	Teamwork (X <sub>3</sub> ) → Community education (Y)	0.153	2.289	0.022 *
H <sub>8</sub>	Innovation (X <sub>4</sub> ) → Community education (Y)	0.155	2.302	0.021 *
H <sub>9</sub>	Leadership (Z) → Community education (Y)	0.174	2.289	0.022 *

Note: \*\* and \* are significant at  $\alpha = 1\%$  and  $5\%$

The test results of direct effect shows that the regression coefficient on all independent variables is positive, which means that any increase in the exogenous variables (competence, partnership, teamwork and innovation) will be followed by an increase in endogenous variables (leadership and community education). The results of statistical testing of the indirect effect of the variables of competence, partnership, teamwork, and innovation on community education with leadership as mediation are presented in Table 3.

**TABLE 3.** Hypothesis Testing of Indirect Effects

Hyphotheses	Regression Model	Indirect Effect	Critical Ratio	Sig.
H <sub>10</sub>	Competence (X <sub>1</sub> ) → Leadership (Z) → Community education (Y)	0.030	2.294	0.023 *
H <sub>11</sub>	Partnership (X <sub>2</sub> ) → Leadership (Z) → Community education (Y)	0.035	2.137	0.034 *
H <sub>12</sub>	Teamwork (X <sub>3</sub> ) → Leadership (Z) → Community education (Y)	0.030	2.369	0.019 *
H <sub>13</sub>	Innovation (X <sub>4</sub> ) → Leadership (Z) → Community education (Y)	0.048	2.012	0.046 *

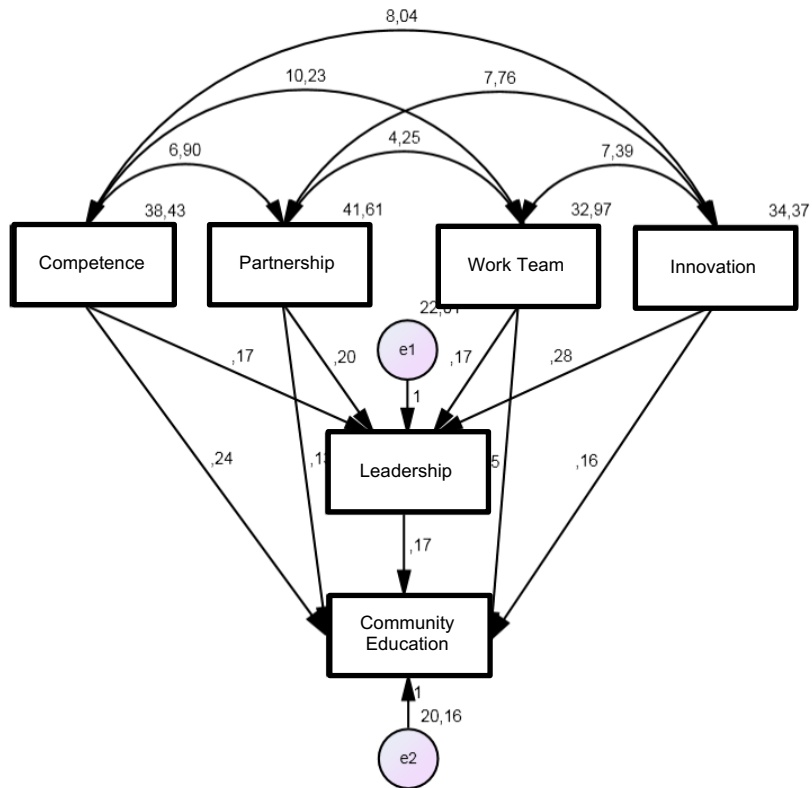
Note: \* is significant at  $\alpha = 5\%$

The pathway testing of the indirect effect on community education shows that all indirect paths have a significant effect, which means that leadership is able to mediate the effect of competence, partnership, teamwork, and innovation on community education. The results of testing the direct effect, indirect effect and total effect between exogenous variables (competence, partnership, teamwork and innovation) on endogenous variables (leadership and community education) are presented in Table 4.

**TABLE 4.** Direct, Indirect and Total Effects

Regression Model	Direct Effect	Indirect Effect	Total Effect
Competence (X <sub>1</sub> ) → Community education (Y)	0.241	0.030	0.272
Partnership (X <sub>2</sub> ) → Community education (Y)	0.126	0.035	0.161
Teamwork (X <sub>3</sub> ) → Community education (Y)	0.153	0.030	0.183
Innovation (X <sub>4</sub> ) → Community education (Y)	0.155	0.048	0.203

It is known that each of the total effects of the independent variables is 27.2% of competence, 16.1% of partnership, 18.3% of teamwork and 20.3% of innovation. Broadly speaking, the results of the path analysis test are presented in Figure 1.



**FIGURE 2.** Path Coefficient of direct and indirect effects

### 3. Discussion

Competence, partnership, teamwork and innovation have a positive and significant effect on leadership. This means that items in competence, partnership, teamwork, and innovation affect leadership. Competence is related to independence of action, work ethic, noble character, stability in acting based on norms, advantage and positive contribution as elements of forming personality competence. Personality competence is proven to have a significant contribution in increasing mastery ability, management ability, and commitment to carrying out tasks well. The



results of this study found that professional competence has a significant contribution in improving work results [34].

Skills of many competencies require experience in organizing people, communicating in front of groups, solving problems, etc. People who have never been in contact with large and complex organizations are unlikely to develop organizational intelligence to understand the dynamics of power and influence in the environment [35]. The influence of leaders in the organization is felt in various activities, from implementing the company's overall work strategy and work planning to communication models of separate group members in an activity [36].

Teamwork leads to better productivity and greater efficiency through new creativity and innovation. The findings of study by Martinich [37] show that workteam is associated with leadership to achieve more efficient work productivity. In addition, working in a team helps to keep team members morale high, and they also feel rewarded by working in the team. The work team also has goals and direction which the leader facilitates through effective communication.

This study found that competence has a positive and significant effect on community education. This means that the items in competence affect community education. The results of this study prove that competence has a significant effect in improving education, especially community education. These findings also contribute to the concept of Mc Clelland [38] that competence is the basis of personal characteristics, which are determining factors in the success or failure of a person doing work in certain situations and Spencer and Spencer [39] who argue that competence is an underlying characteristic of a person related to effectiveness individual performance in his work.

Partnership has a positive and significant effect on community education. This means that the points in the partnership affect community education. Partnerships in education are the key to the successful management of learning today. The current era can be said to be an era of partnership and collaboration, where each institution must strengthen itself with its partners. The size of the strength of an institution is not determined by its internal strength, but rather the strength of its relationships [7].

Innovation has a positive and significant effect on community education. This means that the items in innovation affect community education. Strong innovation capabilities will gain a competitive advantage over competitors, enabling them to achieve superior performance. Indeed, it is one indicator of community education success which can be realized in the form of entrepreneurship. Hence, these results confirm the opinion of Rosenbusch et al., [22] stating that businesses with strong innovation capabilities will gain a competitive advantage in achieving superior performance.

Leadership has a significant positive effect on community education. Leadership is a very dynamic thing that is expected to capably set, define and communicate goals and outline the structure that will be used to achieve these goals and can act as a role model among team members by sharing ideas and creative knowledge to facilitate cooperation and efficiency [40].

Community education is a concept of community-based education and learning aiming that people who do not enjoy education in formal educational institutions can get it in community education institutions, in the hope of changing people's mindsets and improving their standard of living. Thus, it can set awareness of wanting to be formed, trying, and striving to change his life through the process of community education. According to Hoppes [27], a developing country must use community education not only to build on the previous formal education of a small proportion of its citizens, but more specifically to increase the economic and social level of most of its citizens.

Competence, partnership, teamwork and innovation affect community education mediated by leadership. This shows that leadership is able to mediate the effect of competence, partnership, teamwork and innovation on community education as it is very important in improving the quality of human resources, this is inseparable from the purpose of community education itself which serves the community to enable it to grow and develop as early as possible and throughout its life in order to improve its dignity and quality of life; fostering the community to have knowledge, skills and mental attitudes needed to develop themselves, working for a living or continuing to a higher level and/or level of education and meeting the learning needs of the community that cannot be met in the school education path. As a result, it creates reliable and competitive resources that have an impact on changing good thinking patterns for the achievement of better life goals and objectives [41].

Equitable education is included in every education pathway in Indonesia, all of which are inseparable parts. The naming of the path that seems to be a separate field of study will only break the coordination of the community development system itself and break up the social capital that should work hand in hand and work together into a single unit. Therefore, a single complementary program with the same definite steps is required since the estuary of education itself is community development. It is only right to prioritize it to be able to fill in community education programs that are able to provide continuity in strengthening education in Indonesia. In fact, education does not

stand in between educational paths, but in the middle of a complementary community. Building active citizens is a necessity in the world of education [42]. The need for community education arises due to limited resources in a context of rapid population growth where there is a perceived need to provide education for all to enhance human development [43]. Community education is gaining popularity because of its low cost and adaptability to the needs and requirements of society.

## CONCLUSION

The research conducted on 160 tutors for Package C Study Group in Bondowoso Regency showed that the variables of competence, partnership, teamwork and innovation directly and significantly have a positive and significant effect on community leadership and education. Meanwhile, the indirect leadership is able to mediate the effect of the variables of competence, partnership, teamwork, and innovation on community education. It is recommended that the research should also be carried out on tutors for other packaged study groups and with a broader research scale.

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