PRIMARYEDU

Primaryedu: Journal of Elementary Education
Volume 8, Number 2, September 2024

P-ISSN: 2580-9326 | E-ISSN: 2580-7714

Internalization of Higher Level Thinking and TPACK in the Science and Technology Teaching Module for Fourth Grade Elementary School Teachers in Pontianak within the Independent Curriculum Framework

Kartono[1]

[1]Tanjungpura University. Indonesia

Article Info

Article history:

Received Aug 12th, 2024
Revised Sep 4th, 2024
Accepted Sep 27th 2024

Keywords:

Internalization
High Level Thinking
TPACK
Curricullum
Elementary School

Abstract

This research aims to describe the results of the internalization of higher order thinking and TPACK in the science and science subject teaching modules for fourt grades teachers in Pontianak elementary schools within the framework of the independent curriculum. This research uses a qualitative approach with descriptive methods. Qualitative descriptive research will produce descriptive data in the form of words. For research techniques, use manuscript documentation techniques. The results obtained in this research are in the form of independent curriculum teaching module components developed by the fourth grade homeroom teacher at an elementary school in Pontianak. The independent curriculum consists of general information, core components and complete attachments. Based on further research, it was found that teachers had included and implemented higher level thinking along with TPACK in the teaching modules used in learning. Thus, it can be said that teachers have implemented it in learning specifically within the framework of the independent curriculum.

Corresponding Author:

Kartono
Tanjungpura University, Indonesia
Email Author: kartono@fkip.untan.ac.id

INTRODUCTION

In the strategic plan of the Directorate of Basic Education Teachers for 2020-2024, it is stated that the Independent Curriculum is implemented to restore learning through learning that is meaningful, fun and most importantly in accordance with the characteristics of the learning unit, so that it can create Pancasila Students who have critical, creative, independent and independent thinking skills. have noble character, work together and have a character of global diversity. Through this policy, currently, especially at the elementary school level, they are starting to

implement a transition from changing the use of the 2013 Curriculum to the Independent Curriculum, starting from grades I and IV.

To implement a new learning paradigm that is differentiated and student-oriented, each education unit must go through the stages of learning planning and intracurricular evaluation before implementing the Independent Curriculum, one of which is the stage of developing the Independent Curriculum Learning Implementation Plan document or in the Independent Curriculum framework referred to as teaching modules. The aim of developing teaching modules is to develop learning tools that guide teachers in implementing learning. The teaching module to be developed must be relevant; interesting, meaningful and challenging; relevant and contextual; and sustainable.Indexing and abstracting services depend on the accuracy of the title, extracting from it keywords useful in cross-referencing and computer searching. An improperly titled paper may never reach the audience for which it was intended, so be specific.

In a teaching module which is similar to a Learning Implementation Plan or what is called a lesson plan, it contains a more complex class learning plan so that it is called a Plus Learning Implementation Plan which contains learning objectives, learning media, assessments required in one unit or topic based on the Learning Objective Flow (ATP) and so on. As the Merdeka Curriculum begins to be implemented at the elementary school level, teachers automatically have to move quickly to adapt the various needs needed to implement the Merdeka Curriculum in the classroom learning process, one of which is the use of technology (Fatmawati, 2021).

This is of course related to Technology, Pedagogy, and Content Knowledge (TPACK), which is a framework that contains pedagogical, material and technological elements (Nugroho, A. M., Wardono, W., Waluyo, S. B., & Cahyono, A. N., 2019) . In research, Natalia et al (2021) stated that one of the work programs in the Merdeka Curriculum is regarding the digitalization of education which is realized in teaching platforms and learning homes. A teaching platform is a platform that is focused on helping teachers in the process of teaching, learning, developing their competencies and encouraging teachers to work continuously. Meanwhile, the learning house is a platform that students use to obtain learning materials and media independently. The development of these two applications is an action taken by the Ministry of Education and Culture (Kemendikbud) to answer educational needs in the digital era.

Looking at the phenomenon during COVID-19, it turns out that the practice of distance learning and the use of educational technology in Indonesia has given rise to many problems. Several studies show that distance learning causes learning loss (Cerelia et al., 2021; Fatmawati, 2021; Hanafiah et al., 2022; Rhamdan et al., 2021). In subsequent research, it was found that the cause of learning loss was that some teachers had not fully mastered technology and media in distance learning (Adi et al., 2021) and also lacked the use of digital media so that the learning process tended to be boring (Rajib et al., 2022).

Apart from this, as the implementation of the Independent Curriculum progresses at the elementary school level, higher level thinking skills must also be included in the implementation of the learning process. In this curriculum, the learning process is student-centered so that they must be able to think at a higher level or Higher Order Thinking Skills (HOTS) to face competition in the 21st century. So the high-level thinking material should be included in the Independent Curriculum Learning Implementation Plan or teaching modules that are developed by the teacher.

Along with the implementation of the Merdekan Curriculum in the learning process, researchers received information that the majority of elementary schools in Pontianak City had implemented the curriculum according to directions from the Ministry of Education and Culture starting from grades I and IV. Looking at the study above, the researcher is interested in describing the internalization of higher level thinking and TPACK in the learning implementation plans of fourth grade elementary school homeroom teachers in the city of Pontianak within the Independent Curriculum framework.

METHOD

This research uses a qualitative approach with descriptive methods. Qualitative descriptive research will produce descriptive data in the form of words. This means that the data analyzed in it is descriptive and not in the form of numbers as is the case in quantitative research. The data collection technique used is a documentation study technique in the form of an Independent Curriculum RPP or what is called a Teaching Module which was developed by the homeroom teacher for Fourth grades Elementary School in Pontianak. Documentation techniques are used by researchers to investigate written objects such as books, student assignment documents, regulations, and diaries.

Data analysis refers to the opinion of Miles and Huberman (1884) who stated that activities in qualitative data analysis are carried out interactively and continue continuously until completion, so that the data is saturated. Activities in data analysis are data collection, data reduction, data display, conclusion drawing/verification.

Data validation uses techniques to increase persistence by reading various sources related to the research object and theoretical triangulation. Theoretical triangulation according to Lincoln and Guba in Moleong (2014: 331), in testing the validity of data using the perspective of more than one theory in discussing the problems being studied, so that more complete and comprehensive conclusions can be analyzed and drawn. The final result of qualitative research is in the form of a formulation of information or a thesis statement. This information is then compared with the relevant theoretical perspective to avoid individual researcher bias in the findings or conclusions produced. Apart from that, theoretical triangulation can increase the depth of understanding as long as the researcher is able to explore theoretical knowledge in depth based on the results of the data analysis that has been obtained.

RESULTS AND DISCUSSION

Results

Composition or Components of the Independent Curriculum Teaching Module (TM) Document Developed by Fourth grades Elementary School Home Teachers in Pontianak

Based on 20 sample documents of the Independent Curriculum Teaching Module (TM) developed by the homeroom teacher of fourth grades elementary schools in Pontianak City which have been collected by researchers and then data reduction is carried out, the next stage is presenting the arrangement data or components of the Independent Curriculum Teaching Module document. The results of the Focus Group Discussion (FGD) regarding the internalization of high-level thinking in the Independent Curriculum Teaching Module (TM) document developed by the homeroom teacher of fourth grades elementary schools in Pontianak are as follows.

1. Teachers try to internalize high-level thinking in the Independent Curriculum Teaching Module (TM) document because they are aware of the demands of learning developments in the 21st century which prioritize high-level thinking abilities.
2. The teacher tries to stimulate students to be able to think at a higher level by preparing a learning process design as outlined in the Teaching Module.
3. The learning process that is oriented towards higher level thinking requires special attention because there is learning loss during the post-COVID 19 pandemic.
4. Teachers try to design innovative learning processes so that students are well stimulated to think at a higher level.
5. Teachers try to update new knowledge so they can design Teaching Modules, Teaching Materials, Learning Media, students worksheet and learning assessments that can help students to be able to think at a higher level.
6. Teachers try to strengthen the concepts of low-level thinking and medium-level thinking before stimulating students to be able to think at a higher level.

Internalization of Technology, Pedagogy, and Content Knowledge (TPACK) in the Independent Curriculum Teaching Module Plan Document Developed by Fourth grades Elementary School Home Teachers in Pontianak. Based on 20 sample documents of the Independent Curriculum Teaching Module (TM) developed by the fourth grade homeroom teacher of Elementary Schools in Pontianak City which had been collected by researchers and then data reduction was carried out, the next stage was presenting data regarding the internalization of Technology, Pedagogy, and Content Knowledge (TPACK) in the Independent Curriculum teaching module document. To check the validity or authenticity of the data on the internalization of Technology, Pedagogy, and Content Knowledge (TPACK) in the Independent Curriculum Teaching Module document developed by the Fourth grades Elementary School Home Teacher in Pontianak City, the researcher used three data collection techniques, namely 1) Document study, 2) Interview and 3) Focus Group Discussion (FGD) with the following results.

1) Document Study Results

Based on the results of checking the Independent Curriculum Teaching Module (TM) sample documents developed by the homeroom teacher for fourth grades elementary schools in Pontianak City, sample documents number 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 , 12, 13, 14, 15, 16, 17, 18, 19, 20 there are elements of Technology, Pedagogy, and Content Knowledge (TPACK) in more detail, namely in the Learning Steps/Activities component. In this component, the teacher plans to implement TPACK during the learning process.

2) Interview Results

Based on the results of interviews with fourth grade homeroom teachers at elementary schools in Pontianak City, data related to the internalization of Technology, Pedagogy and Content Knowledge (TPACK) can be presented in the sample document for the Independent Curriculum Teaching Module (TM) as follows.

a) TPACK is the integration of technology, teaching methods, understanding of content to create an effective learning experience.

b) Internalizing TPACK in the Independent Curriculum Teaching Module to be applied to the learning process starting with identifying Learning Outcomes, Learning Goals and Learning Goal Flow then planning learning content, adjusting the integration of what technology is used, whether online learning platforms, educational applications, or multimedia tools.
c) The advantage of implementing TPACK is improving the quality of student learning and encouraging teachers to be more innovative in managing the learning process.

3) Results of Focus Group Discussion (FGD)
Based on the results of the Focus Group Discussion (FGD) with the fourth grade homeroom teachers of Elementary Schools in Pontianak City, data related to the internalization of Technology, Pedagogy, and Content Knowledge (TPACK) can be presented in the Independent Curriculum Teaching Module (TM) sample document as follows, (1) Teachers are familiar with Technology, Pedagogy, and Content Knowledge (TPACK), (2) TPACK emphasizes the relationship between subject matter, technology and pedagogy, (3) Internalization of TPACK in the Independent Curriculum Teaching Module (TM) helps achieve learning goals, and (4) Internalizing TPACK in the Independent Curriculum Teaching Module (TM) and applying it to the learning process is very relevant to the interests of students who are generally the Alpha generation and are very close to the use of technology.

Discussion

Components of the Independent Curriculum Teaching Module (TM) Document Developed by Teacher of fourth grades Elementary Schools in Pontianak

Teaching tools are various teaching materials that teachers can use to support their teaching and learning activities, this needs special attention because it is an indicator of learning achievement (Adi, P. W., Martono, T., & Sudarno, S., 2021). Teaching tools are equipped with learning paths and outcomes, which are arranged according to certain domains and phases. Teaching tools can be teaching materials, teaching modules, project modules, or textbooks. What is discussed in this research is related to the preparation of Teaching Modules (TM) in the Independent Curriculum.

The Independent Curriculum Teaching Module (TM) is a document that contains learning objectives, steps and media, as well as the assessments required in one unit/topic based on the Learning Objectives Flow (ATP). The aim of developing the Independent Curriculum Teaching Module (TM) is to support the achievement of competency in Learning Outcomes and Pancasila Student Profiles at each stage of development in a subject. Based on the research results, information was also obtained that the preparation of the Independent Curriculum Teaching Module (TM) developed by the homeroom teacher for fourth grades elementary schools in Pontianak City used the principle 1) Essential. Understand the concepts of all subjects, both from learning experiences and discussions with colleagues who teach other subjects; 2) Interesting, meaningful and challenging. Teaching modules must be able to trigger interest in learning and make students active in the learning process. Apart from that, the contents of the teaching modules also correlate with the knowledge and experience they have. So that students do not have difficulty digesting the information; 3) Relevant and contextual. Apart from having to correlate with knowledge and experience, teaching modules must also adapt to the students' environment; 4)

Sustainable. The flow of the learning process created must be in accordance with the students' learning stages.

Internalization of Higher Level Thinking in the Independent Curriculum Teaching Module (TM) Developed by Fourth grades Elementary School Teachers in Pontianak

High order thinking skills or Higher Order Thinking Skills (HOTS) themselves are interpreted by the fourth grade homeroom teacher at an elementary school in Pontianak City as thinking skills that are not just about remembering, restating and also referring without processing, but the ability to think about analyzing information. critically, creatively, and able to solve problems. Learning that is oriented towards high-level thinking skills is learning that involves 3 (three) aspects, namely: transfer of knowledge, critical and creative thinking, problem solving.

Higher order thinking skills are complex thinking processes in describing material, making conclusions, building representations, analyzing and building relationships involving the most basic mental activities. This skill is also used to underline various processes of thinking skills according to Bloom. HOTS (Higher Order Thinking Skills) is a high-level thinking ability consisting of critical thinking, creative thinking and problem solving (Susanto and Retnawati, 2016).

Internalization of Higher Level Thinking in the Independent Curriculum Teaching Module (TM) Document Developed by Fourth grades Elementary School Teachers in Pontianak

Technological Pedagogical Content Knowledge (TPACK) is a framework that identifies the knowledge that teachers need to teach effectively with a technological framework. Based on the results of checking the sample document of the Independent Curriculum Learning Implementation Plan (RPP)/Teaching Module (TM) developed by the homeroom teacher IV Elementary Schools in Pontianak City, the elements of Technology, Pedagogy, and Content Knowledge (TPACK) are found in the Learning Steps/Activities component. In this component, the teacher plans to implement TPACK during the learning process (Sahidin, L., & Pradjono, R., 2022).

Based on the research results, information was also obtained that TPACK provides new directions for teachers in applying technology to the learning process, so that learning activities can run effectively and efficiently. The advantages of internalizing TPACK in the Teaching Module and applying it to the learning process are increasing students' understanding of mastering material concepts through technology, increasing teacher skills in collaborating technology in learning, students getting new challenges in the learning process, complex learning content can be simplified with the help of technology and can help teachers achieve competency development goals (Ayunda, D. J., Kustiawan, A., & Erlin, E., 2022).

Meanwhile, the disadvantage of implementing TPACK in the learning process is that it requires additional infrastructure, in the form of providing technological devices (Elhani, P., Sopyan, T., & Kustiawan, A. 2023). This will have implications if teachers cannot supervise their students carefully then the use of technology is vulnerable to misuse, for students who are still technologically illiterate, they could be left behind by their friends who are technologically adept, unequal internet access can increase the gap in the quality of education and if teachers If you are

not very proficient in using technology, the teacher's time can be taken up just to focus on understanding the technology (Rhamdan, D., Kule, A., & Wahid, S., 2021).

CONCLUSION

The conclusions obtained from this research can be presented in several ideas to answer the problem formulation presented at the beginning of the research. Components of the Independent Curriculum Teaching Module (TM) developed by the fourth grade homeroom teacher at the Elementary School in Pontianak City. The Independent Curriculum consists of: (1) part 1 general information, (2) part 2 learning outcomes and objectives, (3) part 3 detailed design usage, and (4) section 4 lists modules/meeting details. The internalization of high-level thinking in the Independent Curriculum Teaching Module (TM) sample document developed by the fourth grade homeroom teacher at an elementary school in Pontianak City is contained in the following components, (1) learning objectives for the entire teaching module, (2) choosing a flow reference provided learning objectives, (3) learning objectives, (4) success indicators, (5) list of supporting attachments, (6) activity steps, (6) assessment plan, (7) differentiation plan, (8) reference list, and (9) student worksheets.

Technological Pedagogical Content Knowledge (TPACK) is a framework that identifies the knowledge that teachers need to teach effectively with a technological framework. Based on the results of checking the sample document for the Independent Curriculum Teaching Module (TM) developed by the homeroom teacher for fourth grades elementary schools in Pontianak City, the elements of Technology, Pedagogy, and Content Knowledge (TPACK) are contained in the Learning Steps/Activities component. In this component, the teacher plans to implement TPACK during the learning process.

REFERENCES

Adi, P. W., Martono, T., & Sudarno, S. (2021). Pemicu Kegagalan Pada Pembelajaran Di Sekolah Selama Pandemi Di Indonesia (Suatu Studi Pustaka). Research And Development Journal Of Education, 7(2), 464–473. Https://Doi.Org/10.30998/Rdje.V7i2.10568

Ayunda, D. J., Kustiawan, A., & Erlin, E. (2022). Pengaruh Model Problem Based Learning Berbasis TPACK (Technological Pedagogical Content Knowledge) Terhadap Peningkatan Kemampuan Berpikir Tingkat Tinggi Siswa Pada Materi Sistem Pernapasan (Studi Pada Kelas XI MIPA di MAN 3 CIAMIS).

Cerelia, J. J., Sitepu, A.A., & Toharudin, T. (2021). Learning Loss Akibat Pembelajaran Jarak Jauh Selama Pandemi Covid-19 Di Indonesia. E-Prosiding Seminar Nasional Statistika. Departemen Statistika FMIPA Universitas Padjadjaran, 10, 27–27. Https://Doi.Org/10.1234/PNS.V10I.91

Elhani, P., Sopyan, T., & Kustiawan, A. (2023). Pengaruh Penerapan Model Discovery Learning Berbasis TPACK (Technological, Pedagogical, Content, Knowledge) Terhadap Kemampuan Berpikir Tingkat Tinggi (Hots) Siswa. J-KIP (Jurnal Keguruan dan Ilmu Pendidikan), 4(1), 148-155.

Fatmawati, F. (2021). Hubungan Praktikum Terhadap Hasil Belajar Peserta Didik Pada Pra Pandemi Dan Selama Pandemi Covid-19: Potensi Learning Loss. Biopedagogia, 3(2), 96–113. Https://Doi.Org/10.35334/Biopedagogia.V3i2.2332

Hanafiah, H., Sauri, R. S., Mulyadi, D., & Arifudin, O. (2022). Penanggulangan Dampak Learning Loss Dalam Meningkatkan Mutu Pembelajaran Pada Sekolah Menengah Atas. JIIP - Jurnal Ilmiah Ilmu Pendidikan, 5(6), 1816–1823. Https://Doi.Org/10.54371/JIIP.V5I6.642

Koehler, M.J. & Mishra, P. (2009). What Is Technological Paedagogical Content Knowledge? Contemporary Issues In Technology And Teacher Education, 9 (1), 60-70.

Natalia, K., Wayan S., N., & Sukraini, N. (2021). Pendekatan Konsep Merdeka Belajar Dalam Pendidikan Era Digital. Prosiding Seminar Nasional IAHN-TP Palangka Raya, 3, 22–34. Https://Doi.Org/10.33363/SN.V0I3.93

Nugroho, A. M., Wardono, W., Waluyo, S. B., & Cahyono, A. N. (2019, February). Kemampuan Berpikir Kreatif ditinjau dari Adversity Quotient pada Pembelajaran TPACK. In PRISMA, Prosiding Seminar Nasional Matematika (Vol. 2, pp. 40-45).

Rajib, M., Puspita Sari, A., Negeri, S., Polewali Mandar, K., & Barat, S. (2022). Potensi Learning Loss Di SMA Negeri 4 Polewali Selama Pembelajaran Daring Pada Masa Pandemi Covid-19. BIOMA: Jurnal Biologi Dan Pembelajarannya, 4(1), 40–48. Https://Doi.Org/10.31605/BIOMA.V4I1.1592

Rhamdan, D., Kule, A., & Wahid, S. (2021). Analisis Pemanfaatan E-Learning Di Masa Pandemi (Studi Kepustakaan: Learning Loss Pada Peserta Didik). Jurnal Pendidikan Dan Kewirausahaan, 9(2), 432–446. Https://Doi.Org/10.47668/PKWU.V9I2.263

Susanto, E., & Retnawati, H. (2016). Perangkat Pembelajaran Matematika Bercirikan PBL untukMengembangkan HOTS Siswa SMA. Jurnal Riset Pendidikan Matematika. 3(2): 189.

Waluyo, E., & Nuraini, N. (2021). Pengembangan Model Pembelajaran Creative Problem Solving Terintegrasi TPACK Untuk Meningkatkan Kemampuan Pemecahan Masalah. Jurnal Riset Pendidikan Matematika, 8(2), 191-205.