

## TEACHER PROFESSIONAL COMPETENCIES IN DEVELOPING STUDENTS' DISCIPLINE CHARACTER THROUGH INTERACTIVE WORDWALL MEDIA IN NATURAL AND SOCIAL SCIENCE LEARNING IN FOURTH GRADE OF ELEMENTARY SCHOOL

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### ABSTRACT

This study aims to analyze the professional competence of teachers in developing students' disciplined character through interactive media, Wordwall, in natural and social science learning in elementary schools. The novelty of this study lies in the integration of teachers' professional competence and Wordwall in forming students' disciplined character in science learning. The qualitative research method uses a case study design at SDN 1 Bedana. The research subjects were class teachers and 28 fourth-grade students. Data collection techniques were through observation, interviews, and documentation. Data analysis was carried out using an interactive model with stages of condensation, data presentation, and conclusion drawing. Data validity was tested through triangulation of sources and techniques. The results showed that teachers' professional competence in natural and social science learning on Wordwall plays a role in developing the disciplined character of fourth-grade elementary school students. The integration of material mastery, goal-based planning, development of interactive teaching materials, implementation of structured learning, and utilization of technology creates a systematic and time-based learning process. These conditions encourage students to be more disciplined by being accustomed to obeying rules, being punctual, responsible, and consistent in learning. In conclusion, students' disciplined character can be strengthened through good teacher professional abilities and the use of Wordwall learning media regularly and in a targeted manner. Therefore, teachers and schools need to optimize its use so that learning is of higher quality and students become more accustomed to being disciplined.

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## Introductions

Natural and social sciences learning in elementary schools plays a crucial role in developing conceptual understanding and shaping students' character from an early age. In the implementation of the Independent Curriculum, learning natural and social sciences focuses not only on mastering scientific concepts but also on strengthening attitudes and character values (Kemdikbudristek, 2022; Insiano, 2025; Syafiullah et al., 2025). This aligns with the demands of 21st-century learning, which emphasizes a balance between knowledge, skills, character, and the use of technology (Suyitno, 2021; Aryani & Yulianti, 2023). Therefore, natural and social sciences learning is not only oriented towards achieving cognitive learning outcomes but also towards character development to equip students for everyday life. learning

One of the characteristics that needs to be developed in natural and social sciences learning is discipline, as this character plays a role in forming orderly and responsible learning habits (Mardikarini & Putri, 2020). Discipline is reflected in students' ability to comply with rules and consistently carry out tasks in accordance with applicable regulations (Widhaningsih & Mawardi, 2021). Discipline development does not occur instantly, but rather through a structured and consistent process of habituation within the school environment (Chan et al., 2019; Manshur, 2022). However, natural and social sciences learning is still not optimal in fostering discipline. Students are still not accustomed to implementing discipline (Ayu et al., 2024). This lack of discipline is evident in late submission of assignments, inconsistent adherence to rules, and low responsibility in completing learning activities (Utami, 2021). This emphasizes the need for more active and meaningful learning improvements, where the role of teachers is crucial through their professional competence.

Teachers with professional competence act as learning facilitators who not only focus on improving the quality of the learning process but also contribute to instilling character values in students (Nursalim, 2017; Suryati & Aryani, 2025). Professional competence includes mastery of material, the ability to design learning, the development of innovative teaching materials, and the use of technology as part of the learning process (Sunarsih, 2022; Mia & Sulastri, 2023). These competencies have been shown to influence the quality of learning, student learning outcomes, and the formation of disciplined character in elementary schools (Afandi et al., 2023; Nabila, 2025). Thus, teacher professional competence is an important foundation in addressing various learning problems and strengthening student character.

In line with the important role of teachers, the use of digital learning media is a relevant supporting strategy to strengthen the quality of science and science learning while helping teachers implement their professional competencies in the classroom. Digital media can create more interactive, visual, and engaging learning experiences, thereby increasing student engagement and character development in the learning process (Afriyadi et al., 2023; Paling, 2024). The use of this media is also aligned with character building, particularly in the discipline dimension, thus strengthening the role of teachers in shaping student character through learning (Ratnawati & Gumiandari, 2021). One medium that teachers can utilize to develop discipline is a Wordwall.

Wordwall is an interactive learning platform based on educational games that can be used for quizzes, exercises, and learning evaluations (Mustika et al., 2024). Wordwall can be a tool for teachers to integrate professional competence with technology-based learning (Hartati et al., 2024). Various studies have shown that Wordwall can improve student learning outcomes and conceptual understanding (Syafiullah et al., 2025) while also supporting the formation of disciplined character because students are accustomed to following rules, completing assignments on time, and taking responsibility in the learning process (Novianti & Mufaridah, 2023; Ramadani et al., 2024). However, existing studies still tend to discuss the effectiveness of Wordwall and teacher professional competence separately, so the integration of the two in strengthening disciplined character in science learning in elementary schools still needs further study.

Based on these gaps, the novelty of this research lies in the analysis of the relationship between teacher

professional competence in natural and social science learning and strengthening students' disciplinary character through the use of interactive Wordwall media in elementary schools. Teacher professional competence was analysed based on material mastery, understanding learning standards and objectives, developing innovative and contextual teaching materials, continuous teacher professional development, and utilising technology-based media and learning resources (Wijaya, 2018). Student disciplinary character was analysed based on compliance with rules, punctuality, responsibility for the learning process and outcomes, and consistency (Addawiyah & Kasriman, 2023).

The research problem is formulated as follows: *"How are teachers' professional competences in developing students' disciplinary character through interactive Wordwall media in natural and social science learning in elementary schools?"* This study aims to analyse teachers' professional competence in developing students' disciplinary character through interactive Wordwall media in natural and social science learning in elementary schools. Theoretically, this research is expected to enrich the study of teacher competence, disciplinary character education, and digital Wordwall learning media. Practically, this research can be an input for teachers and schools in optimising Wordwall-based learning, improving the quality of natural and social science learning and strengthening the disciplined character of students in elementary schools.

## Research Method

This research method is qualitative with a case study design, a qualitative research approach used to examine a case in depth, in detail, and comprehensively within a real-life context. Creswell (2019) explains that a case study is a qualitative research strategy that explores a bounded system through the collection of rich and diverse data in one or more specific cases. This concept aligns with Moleong (2018) and Sugiyono (2021), who emphasize that qualitative research aims to understand phenomena holistically within a natural context. In this study, the case studied is the professional competence of fourth-grade teachers in natural science and social science and its impact on the development of students' discipline through the use of interactive Wordwall media as a digital learning tool.

This research was conducted from February to April 2026 at Bedana 1 Elementary School, Cilacap. The location was selected based on its suitability to the research focus, namely, the implementation of natural and social sciences based on the independent curriculum, the use of Wordwall media, and the habituation of student discipline at the school. Subjects were selected using a purposive sampling technique based on their relevance to the research focus. These included a fourth-grade teacher as the primary informant, 28 fourth-grade students (18 boys and 10 girls) to assess student discipline, and the principal as a supporting informant regarding learning policies and implementation. This research was conducted with ethical considerations, including obtaining official permission from the school, maintaining the confidentiality of the subjects' identities, and ensuring objective data collection without disrupting the learning process.

Data collection techniques included observation, interviews, and documentation. Observations were conducted during approximately four fourth-grade natural and social sciences learning sessions to observe the learning process, teacher use of Wordwall, student interactions during learning activities, and student disciplinary behavior in the classroom. Interviews were conducted semi-structured using interview guidelines developed based on the research focus and flexibly developed in the field. Examples of interview questions for teachers include *"How do you integrate Wordwall into science and social studies lessons to instill discipline in students?"* and for students, *"What do you do to ensure that you can participate in Wordwall lessons in an orderly and timely manner?"* Documentation was used to collect data in the form of science and social studies teaching modules, Wordwall tools, student evaluation results, teacher journals, classroom rules, and photographs of learning activities. This technique aligns with Walidin & Tabrani (2021), who state that data collection in qualitative research is conducted triangulating to obtain valid, in-depth, and comprehensive data.

The validity of the data in this study was tested through source triangulation and technical triangulation. Source

triangulation was conducted by comparing data from teachers, students, the principal, and parents, while technical triangulation was conducted by matching the results of observations, interviews, and documentation. Furthermore, member checking was conducted to ensure data conformity with informants, and an audit trail was conducted by systematically documenting the entire research process from data collection to conclusion drawing. These steps are used to increase the credibility, dependability, and validity of the data so that the research findings can accurately describe the relationship between teacher professional competence in learning natural and social sciences through Wordwall media and strengthening the disciplined character of elementary school students.

Data analysis used an interactive model from Miles, Huberman, & Saldaña (2018), which includes data condensation, data presentation, and drawing and verifying conclusions. The analysis process was carried out cyclically from the beginning of data collection until valid and meaningful conclusions were obtained. This study focused on two main aspects as analysis categories: teacher professional competence and student disciplinary character. Teacher professional competence was analyzed based on material mastery, understanding of learning standards and objectives, development of innovative and contextual teaching materials, continuous teacher professional development, and utilization of technology-based media and learning resources (Wijaya, 2018). Meanwhile, student disciplinary character was analyzed based on compliance with rules, punctuality, responsibility for the learning process and outcomes, and consistency of learning (Addawiyah & Kasriman, 2023). These two focuses were used as references in data reduction, thematic categorization, narrative presentation, and conclusion drawing to examine the critical relationship between teacher professionalism and student discipline development through Wordwall media in fourth-grade elementary school science and social studies.

## Results and Discussion

### Result

The results of this study were obtained through a qualitative data collection process focused on teacher professional competence in natural and social science learning as a basis for developing the disciplined character of fourth-grade students at SD Negeri 1 Bedana through the use of interactive Wordwall media. Teacher professional competence includes the following: (1) mastery of natural and social science material, including concepts, facts, and their relevance to students' daily lives; (2) understanding of learning outcomes and objectives as a reference in planning, implementation, and evaluation; (3) development of creative, contextual, and activity-based teaching materials; (4) continuous teacher professional development through planning, implementation, evaluation, and reflection on learning; and (5) utilization of digital learning media such as Wordwall in the learning process.

All of these indicators are used to analyze the implementation of teacher professional competence in natural and social science learning and its contribution to strengthening students' disciplined character. Disciplinary character in this study is analyzed sequentially based on (1) compliance with learning rules, (2) punctuality in completing and submitting assignments, (3) responsibility for the learning process and outcomes, and (4) consistency in participating in learning activities. Thus, teacher professional competence is understood not only as teaching ability but also as a factor that plays a role in developing students' disciplined character through Wordwall-based natural and social science learning. The results of this analysis are presented in the following table.

**Table 1. Analysis of Teacher Professional Competence in Developing Students' Disciplined Character through Interactive Word Wall Media in Fourth Grade Natural and Social Science Learning**



Indicators of Teachers' Professional Competence	Observation	Documentation	Interview	Implications for Discipline Character	Meaning of Findings
Mastery of Natural and Social Science subject matter (concepts, facts, and interrelated phenomena)	The teacher delivered natural and social science material systematically and integrated Wordwall-based questions with students' daily life contexts.	Lesson plans and teaching modules showed a structured integration of natural and social science content with Wordwall activities.	The teacher demonstrated strong mastery of natural and social science content and was able to package it into interactive Wordwall-based questions.	(1) Compliance with learning rules, (2) Punctuality in completing tasks	Strong mastery of subject matter makes the learning process more directed, enabling students to comply with learning rules and complete tasks within the allotted time through Wordwall activities.
Understanding of learning outcomes and objectives in Natural and Social Science	The teacher formulated learning objectives, implemented Wordwall-based activities, and evaluated students' learning outcomes.	Teaching materials, learning objectives, and Wordwall-based assessment instruments were designed in accordance with learning achievement targets.	The teacher stated that learning objectives served as the main reference for implementing Wordwall activities and conducting assessments.	(1) Compliance with learning rules, (2) Timeliness in completing and submitting tasks, (3) Responsibility in the learning process and outcomes	Clearly defined learning outcomes guide the entire instructional process, encouraging students to follow rules, complete tasks on time, and take responsibility for their learning outcomes.
Development of creative and innovative Wordwall-based teaching materials	The teacher utilized Wordwall in the form of quizzes and interactive games and evaluated students' responses.	Student worksheets, question banks, and Wordwall content included varied questions using images, text, and real-life contexts.	The teacher explained that Wordwall increased students' learning interest while facilitating classroom discipline management.	(1) Compliance with learning rules, (2) Timeliness in completing and submitting tasks, (3) Responsibility in the learning process and outcomes	Wordwall-based teaching materials make learning more engaging and structured, leading students to be more disciplined in following rules and completing tasks thoroughly.
Continuous professional development of teachers	The teacher conducted planning, implementation,	Teaching journals, reflective notes, Wordwall evaluation	The teacher stated that reflective practice helped	(1) Consistency in participating in learning activities, (2) Punctuality in	Continuous professional development enhances instructional quality,

Indicators of Teachers' Professional Competence	Observation	Documentation	Interview	Implications for Discipline Character	Meaning of Findings
	evaluation, and reflection on Wordwall-based learning activities.	results, and revised learning tools.	improve the effectiveness of Wordwall implementation.	completing tasks, (3) Responsibility in the learning process and outcomes	which positively impacts students' consistency, punctuality, and responsibility.
Utilization of ICT and Wordwall media in learning	The teacher used Wordwall as a medium for instruction, practice, and digital assessment.	Documentation of Wordwall implementation in natural and social science learning.	The teacher explained that Wordwall helped increase student engagement and discipline.	(1) Compliance with learning rules, (2) Timeliness in completing tasks, (3) Consistency in participating in learning activities	The use of Wordwall as an ICT-based learning medium creates a structured and rule-based learning environment, thereby strengthening students' discipline comprehensively.

Based on the results of data triangulation obtained from observations, documentation, and interviews with the fourth-grade teacher, principal, and students as presented in Table 1, it can be identified that teachers' professional competence in natural and social science learning makes a significant contribution to strengthening the discipline character of fourth-grade elementary school students. All indicators of teachers' professional competence demonstrate a close relationship with the emergence of students' disciplined behavior during the learning process, including compliance with rules, punctuality in completing and submitting assignments, responsibility for both the learning process and outcomes, and consistency in participating in learning activities. The findings are described as follows.

#### **Mastery of Natural and Social Science Subject Matter (Concepts, Facts, and Interrelated Phenomena)**

Teachers' mastery of natural and social science subject matter is reflected in their ability to deliver instruction systematically and connect concepts to phenomena closely related to students' daily lives. For instance, in the topic of *"Environmental Changes,"* the teacher did not merely explain the concept directly but presented it through interactive Wordwall-based activities. Observation results indicated that the questions used in Wordwall were linked to real-life situations, such as school environmental cleanliness and the impact of human activities on nature, which made students more active and responsive during the learning process. This was further supported by documentation in the form of lesson plans and teaching modules that had been systematically designed with integrated digital media.

The teacher explained that strong subject mastery greatly assisted in determining effective instructional delivery strategies in the classroom. The teacher stated, *"I need to master the material so that I can more easily relate it to simple examples that are close to students' daily experiences"* (Interview with Teacher, 12/03/2026). Meanwhile, the principal observed that the teacher had been able to develop the material into more varied learning experiences rather than relying solely on lecture-based instruction (interview with principal, 12/03/2026).

Based on student interviews on March 13, 2026, the use of Wordwall encouraged discipline in following learning rules and time limits. Student A stated that he had to read the questions quickly to avoid missing time and thus be more focused while working. Student B added that each question must be answered in the specified order and time limit so that he could not play around while studying. Student C revealed that he tried to complete the questions on time because the Wordwall system immediately closed answers if they were late. This condition made students

actively involved in activities that demanded accuracy, focus, and adherence to learning rules.

#### **Understanding of Learning Outcomes and Objectives in Natural and Social Science**

In the implementation of natural and social science learning in the fourth grade, the teacher consistently used learning outcomes and objectives as the primary direction for organizing classroom activities. Each learning activity was not carried out spontaneously but had been carefully aligned with the intended objectives, both in terms of conceptual understanding and student engagement in the learning process. Observation results indicated that the learning activities were systematically structured in stages, beginning with material explanation, followed by examples, and concluding with practice activities using Wordwall. These activities were interconnected and designed to help students gain a more comprehensive understanding of the topic of environmental change. Learning documents, such as lesson plans and teaching modules, further demonstrated that the teacher had designed instructional activities in accordance with the predetermined learning outcomes.

In practice, the teacher recognized that instructional direction must be clearly established so that students do not merely participate in activities without understanding the purpose behind them. The teacher explained, *“Every classroom activity has actually been designed according to the learning objectives so that students understand what they are learning and do not simply complete tasks without meaning”* (Interview with Teacher, 12/03/2026). Similarly, the principal assessed that the teacher had effectively managed the learning material and developed it into more varied and engaging instructional activities rather than relying on monotonous teaching approaches. This made the learning process more interactive and less teacher-centered.

This is reinforced by student experiences, showing that the use of Wordwall helps students understand the learning flow and assigned tasks. Student D stated, *“Now I pay more attention to the instructions before working because I'm afraid of making a mistake when the Wordwall starts”* (Interview with Student D, 03/13/2026). Student E revealed that he learned not to delay answers because each task has a deadline, while Student F said that he became more responsible because the results of his work were immediately visible on the system. These findings indicate that students better understand instructions, pay more attention to the completion time of tasks, and are more responsible in following the learning process.

#### **Creative Development of ICT-Based Natural and Social Science Teaching Materials (Wordwall)**

The development of teaching materials in fourth-grade natural and social science learning was evident in the teacher's efforts to transform the topic of environmental change into more interactive learning activities through Wordwall. Instruction was no longer solely dependent on verbal explanation but was directed toward digital task-based exercises presenting real-life situations familiar to students, such as classroom cleanliness, waste management in the school environment, and the impact of human behavior on nature. Observation results showed that students appeared more actively engaged, as each question was presented in the form of a game requiring quick responses as well as accuracy in answering.

Learning documentation further demonstrated that lesson plans and teaching modules had been systematically designed with the integration of digital media, particularly Wordwall, as part of an active learning strategy. The teacher not only designed the learning materials but also structured a sequence of activities that enabled students to learn through direct experiences supported by simple technology that was easily accessible in the classroom. In an interview, a teacher explained that the development of ICT-based teaching materials was carried out to prevent monotony in learning. He stated, *“I use Wordwall so that students can learn while playing but still understand the environmental material”* (Interview with Teacher, 12/03/2026). The principal also assessed that this innovation made science learning more-lively because students not only listened to the teacher's explanations but also actively responded to the stimuli provided through various interactive activities on the Wordwall.

Based on interviews with students on March 13, 2026, Wordwall-based learning was deemed more challenging and enjoyable. Student A revealed that he tried to solve the problems quickly to keep up with his classmates, while

Student B felt more thorough because each answer was immediately scored by the system, and Student C stated that he had to stay focused to avoid losing points in the game. These experiences demonstrate that the use of Wordwall encourages students to be more focused, thorough, active, and responsible in completing assignments within the allotted time.

#### **Continuous Professional Development of Teachers**

Teachers' professional development was reflected in their consistency in designing, implementing, and evaluating Wordwall-based learning activities. Observations showed that the teacher routinely conducted reflections after each lesson to improve instructional strategies for subsequent meetings. Documentation in the form of teaching journals, reflective notes, and revised instructional materials further indicated the teacher's commitment to continuously improving the quality of instruction. The teacher explained, *"After each lesson, I evaluate it again so that in the next meeting, students can become more disciplined"* (Interview with Teacher, 12/03/2026).

Students demonstrated consistency in their learning attitudes. Student D said he felt more disciplined because he was constantly reminded to complete his work on time. Student E explained that if I had an assignment, I would do it straight away, without delay. Student F added, *"I've become accustomed to following the rules every time I learn"* (Interview with Student F, 03/13/2026).

The principal further emphasized that teacher reflection had become part of the school's working culture and had positively influenced instructional quality. This finding indicates that teachers' ongoing professional development contributes significantly to fostering students' consistency and responsibility in learning. It demonstrates that continuously improving professional competence has a direct impact on shaping students' disciplinary character, particularly in terms of consistency, responsibility, and adherence to classroom procedures during the learning process.

#### **Utilization of ICT and Wordwall Media in Natural and Social Science Learning**

The use of Wordwall as an ICT tool in science learning makes the learning process more focused and interactive. Students not only answer questions but also follow the established rules, particularly regarding time limits and accuracy of answers. Students appear more focused during the activity because each question comes with a time limit, encouraging them to work more quickly and carefully.

Learning documentation revealed that Wordwall was utilized both as a practice tool and as a digital assessment medium integrated into fourth-grade Natural and Social Science instruction. Its implementation was not incidental but had been systematically embedded into instructional planning to align with the intended learning objectives. During interviews conducted on 12/03/2026, the teacher explained that Wordwall helped create a more active learning atmosphere while simultaneously training students' discipline in following established rules. The principal further added, *"The use of this digital media makes learning more structured and easier to manage in the classroom"* (Interview with Principal, 12/03/2026).

From the results of student interviews on March 13, 2026, it was clear that this medium provided a learning experience that demanded precision and focus. Student B said that he had to really pay attention to the time so as not to miss the opportunity to answer. Student C revealed that he learned to stay calm and not rush because each answer was limited by time. Meanwhile, Student E said that he had to follow the game rules seriously to get maximum results. These findings indicate that the use of Wordwall as an ICT medium not only makes learning more interesting but also helps shape students' discipline in complying with the rules and responsibility in completing assignments within the specified time.

#### **Discussion**

Teacher professional competence in Wordwall-based science and social studies learning not only serves as an indicator of pedagogical ability but also serves as a mechanism for shaping the disciplined character of fourth-grade elementary school students. These findings demonstrate that material mastery, lesson planning, teaching material

development, ongoing reflection, and technology utilization do not stand alone but are integrated in gradually and meaningfully shaping student discipline through direct classroom learning experiences. This is relevant to Bagou & Sukung (2020), who asserted that teacher professional competence is closely related to the effectiveness of learning performance. The similarity lies in the teacher's role as the primary manager of the learning process, which determines the success of classroom learning activities. The difference is that this study more specifically examines the implementation of these competencies in the context of the use of interactive digital media, which directly impacts student discipline habits, not just aspects of teacher performance in general.

In terms of character formation, the results of this study also reinforce the idea of Addawiyah & Kasriman (2023) that discipline develops through habituation and classroom management. However, the use of Wordwalls introduces additional mechanisms such as time limits, a scoring system, and direct feedback that accelerate the internalization of discipline. Thus, digital media is not only a learning tool but also a learning environment that systematically fosters habits of adherence to rules, responsibility, and punctuality.

In terms of material mastery, teachers' ability to connect natural and social science concepts to real-world contexts strengthens student engagement while fostering adherence to learning rules. This finding aligns with Mahmudah et al. (2023), who demonstrated a link between teacher material mastery and student learning discipline. Similarly, Adim & Nafi'ah (2025) also found that teacher professional competence influences student learning outcomes. However, previous research focused more on teacher competence in relation to academic achievement, whereas this study demonstrates that material mastery combined with Wordwalls contributes to fostering student discipline, particularly in following rules and completing assignments within specified deadlines.

Furthermore, at the planning stage, the connection between learning outcomes and activities creates a clear, unambiguous learning flow for students. This makes the learning process more manageable, so students know what to do from start to finish. This aligns with the Directorate General of Teachers and Education Personnel (2023), which emphasizes that learning outcomes form the basis for learning direction. Elmananda et al. (2024) also demonstrated that good learning planning supports the effectiveness of the learning process. However, this study further emphasizes that digital media-based planning not only regulates the learning flow but also fosters disciplined student habits in understanding instructions, managing time, and taking responsibility for the learning process.

At the teaching materials development stage, Wordwall transforms learning into a more dynamic experience, where students respond, compete against time, and follow the rules of the game. This situation fosters greater focus and active engagement. These findings align with Sari & Pasha (2024), who stated that Wordwalls can increase student learning engagement. Utami et al. (2022) also emphasized that Wordwalls can foster discipline through interactive learning. However, this study demonstrates a more specific aspect: that the Wordwall-based teaching material design not only creates learning interest but also fosters student habits of adhering to game rules, managing time, and completing assignments independently without relying on teacher direction.

The ongoing development of teacher professionalism doesn't stop at the implementation stage of learning but also involves repeated evaluation and reflection to improve subsequent learning processes. This consistency impacts the regularity of the classroom learning process. In line with Aryani (2024), who explained that the continuous development of teacher professionalism impacts the quality of learning. The difference is that previous research focused more on developing teacher competencies within the scope of performance, whereas this study demonstrates that Wordwall-based learning reflection plays a role in shaping consistent student disciplinary behavior over time.

In terms of technology and media utilization, Wordwalls can create more engaging learning and build structured learning patterns. Students become accustomed to following rules, paying attention to deadlines, and completing assignments in a focused manner. This is in line with Kurnia et al. (2025), who stated that digital learning media can increase student engagement in the learning process. Hidayah & Suyitno (2021) also emphasized that interactive media plays a role in strengthening student character. Both studies show that digital media has a positive

impact on students' learning processes and character. Unlike previous studies, these findings indicate that Wordwalls not only increase student engagement and character but also systematically foster discipline through the habit of following rules, managing time, and completing assignments in elementary school science learning.

Overall, this study reinforces previous findings regarding teacher professional competence and the use of digital media in learning. The difference lies in the emphasis that the integration between teacher professional competence and Wordwall not only impacts engagement or learning outcomes but also forms a more tangible pattern of student discipline, seen from compliance with rules, punctuality, responsibility in completing assignments, and consistency in following the learning process in elementary school.

## CONCLUSION

Teachers' professional competence in learning natural and social sciences through interactive Wordwall media can develop discipline in fourth-grade elementary school students. Integrated professional aspects of material mastery, goal-based learning planning, interactive teaching material development, structured learning implementation, and appropriate technology utilisation contribute to the development of more structured, meaningful, interactive, and time-based learning patterns. This allows students' discipline to develop gradually through the habit of adhering to learning rules, punctuality in completing assignments, responsibility for the learning process and outcomes, and consistency in participating in learning activities.

Theoretically, this study confirms that teacher professional competence, supported by Wordwall, is related to the development of discipline in students through structured, technology-based learning. Practically, teachers can utilise digital Wordwall media to create more focused natural and social science learning so that students develop discipline in adherence to rules and learning schedules. Teachers need to be more creative in using digital media, schools need to provide supporting facilities and policies, and students need to cultivate discipline in the learning process.

This study is limited to a single class and a specific learning context, so the results cannot be generalised broadly. It is recommended that future research expand the subject area to several schools or different levels and use more diverse research approaches, such as quantitative or mixed methods, to obtain more comprehensive results. Furthermore, it is necessary to examine other variables that influence student character formation through digital media for a more in-depth study.

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