

## Learning Reform: Why does Behavioral Theory prevent interactive teaching?

Rr. Eko Susetyarini<sup>1\*</sup>, Baiduri<sup>1</sup>, Rani Darmayanti<sup>1</sup>, Nuryami Nuryami<sup>1</sup>, Yani Sukriah Sirega<sup>1</sup>, Nur Sahara<sup>1</sup>, and Kabul Suprayitno<sup>1</sup>

<sup>1</sup>Universitas Muhammadiyah Malang, Indonesia

\*Corresponding author: [susetyorini@umm.ac.id](mailto:susetyorini@umm.ac.id)

### KEYWORDS

behavioral theory  
interactive teaching  
learning reform

**ABSTRACT** During interactive learning, the teacher plays a crucial role in engaging pupils in developing essential skills such as critical thinking, social interaction, and practical abilities. The shift in the learning paradigm has led to enhancements in the education system in Indonesia. Several initiatives have been implemented to enhance and elevate the standard of education. Teaching can be successful by utilizing educational and learning theory ideas, such as behaviourist theory. Behaviourist theory is frequently criticized for its inability to elucidate intricate learning scenarios, as it tends to reduce various educational and learning factors into simple stimulus and response associations. Conventional methods in this scenario indicate that behavioural learning approaches prioritize discipline and instruction, thereby impeding the development of interactive teaching connections. The research utilized the Systematic Literature Review (SLR) approach. The study used journal articles from the Publish or Perish search application extracted from the Google Scholar database between 2014 and 2024. The keywords used were "Behavioural principles," "Token system," "Group contingency," "Instructional reform," and "impact." The research starts by analyzing the fundamental principles of behaviourism, evaluating attitudes or behaviour using different examples of changes in interactive learning, and explaining the implementation of suitable behaviour in each learning design process from a theoretical perspective. This study provides detailed insights into utilizing 4-term contingencies involving motivational operations, token systems, and group contingencies. It highlights the influential role of behavioural theory in shaping the execution of educational reforms in the classroom, drawing from theoretical and practical perspectives. Behavioural principles can shape academic conclusions. Moreover, applied behaviour analysis can be used to achieve functional classroom learning improvements.

© The Author(s) 2024

## 1. INTRODUCTION

Education is a coordinated effort to provide an atmosphere and method for learning that helps pupils develop spiritual power (Grimmelikhuijsen, 2017), intelligence (Lister, 2014), noble values (Reichow, 2012), self-control (Thelen, 1991), and state and society abilities (UU No. 20 of 2003). Under the Ministry of Education and Culture (Kemendikbud), the government updates the curriculum often. Curriculum reform occurs frequently in education. Indonesia has undergone significant reforms, from varied educational models to independent learning. Digital science and information technology underpin the autonomous curriculum, which addresses 21st-century goals and challenges (Hayes, 2020; Parasuraman, 2008; Vervliet, 2013). All professional digital or hybrid technology activities undergo notable modifications. This change requires HR to be ready for digital issues. The government wants to modify the curriculum to prepare students for the digital age. Educational systems unite academic knowledge and principles. Educational reform improves education. Educational change must be planned and methodical (Ehde, 2014; Granic, 2006; Roggen, 2010). Programmed educational reform involves school curricula.

Educational reform is a government attempt to improve education. Regular curriculum reforms aim to improve education. The existing curriculum is updated, developed, and enhanced by the new curriculum. Reforms might cause school and public difficulties. Perski, (2017) noted that implementing climate change and its causes are problematic.

The curriculum reform has altered the structure of educational learning activities. The curriculum has the most significant impact on educational results. McClelland (1998) suggested that the curriculum can be a tool to accomplish objectives and instructions in carrying out education across all academic tiers. The teacher is vital in engaging students in developing critical thinking (Sherin, 2016; Volpp, 2021), social connection (Blanke, 2015; Engelhard, 2013), and practical skills during interactive learning (McPhail & Rexroat, 1979; Vigliocco, 2011). The change in the learning paradigm has resulted in improvements in the education system in Indonesia. Various initiatives have been put in place to improve and raise the quality of education. Teaching can be effective by applying educational and learning theories, including behaviourist theory (Bailey, 2018; Fuadi, 2017; Stone, 1982). Behaviourist theory is

sometimes criticized for failing to explain complex learning situations since it seeks to simplify numerous educational and learning elements into essential stimulus and response connections. Traditional methods in this situation suggest that behavioural learning strategies prioritize punishment and instruction, which hinders the formation of interactive teaching relationships.

Applied behaviour analysis examines human behaviour, focusing on observable and socially significant behaviours. It assesses the target behaviour through the creation of an observation system. It influences and regulates the occurrence of current and future behaviours by using motivational operations, antecedent stimuli, and consequences within the principles of behaviour to mould the targeted behaviour. Teaching encompasses visible and socially significant actions, categorized into two primary branches: teaching behaviours and learning behaviours. The primary objective of education and classroom reform should be accomplished by modifying teaching and learning behaviour within the classroom. Thus, by examining particular behaviours in teaching and learning and applying behavioural principles in instructional design, one can explain, forecast, and manage classroom teaching and learning behaviours through a natural science lens, aiding in advancing educational reform goals.

## 2. METHOD

Secondary data was collected by a systematic literature review (SLR) following the seven-stage process outlined by Darmayanti (2018), which includes utilizing the SLR 7P diagram technique.

Defining the problem you wish to address at the beginning is crucial. The research commences with analyzing the fundamental principles of behaviourism, assessing attitudes or behaviour through different instances of changes in interactive learning and elucidating the implementation of suitable behaviour in each learning design process from a theoretical perspective. In the following phase of P2, the task is to determine the search tool or program that will be utilized to find the articles for selection. This study uses the Publish or Perish (PoP) search tool. Step three, P3, designates the website as the database or data source to be controlled with the PoP. The data is sourced from articles, theses, books, and journals listed by SINTA, Garuda, and Crossref from various perspectives. Step P4 entails choosing a database based on predefined keywords. The keywords utilized include "Behavioural principles," "Token system," "Group contingency," "Instructional reform," and "im-

pact." Step P5 eliminates prior publications by only including articles published from 2018 to 2024 within the recent decade. The selected works included Indonesian and English texts and were published as PDFs. Step P6 entailed examining data regarding conceptual links. Step P7 consisted of analyzing and completing specific articles focusing on interpretative surveys to get insight into processes and circumstances.

## 3. RESULT & DISCUSSION

Two categories of observable, culturally important behaviours are involved in acquiring knowledge. Activities specifically focused on teaching and learning. Adjusting teaching methods, learning methodologies, and classroom conduct is essential to achieve the primary goal of educational and classroom improvement. Teaching and learning attitudes and behaviour in schools can be described, predicted, and controlled using a natural science perspective to help achieve educational reform goals. This is achieved by examining particular behaviours within the teaching and learning process and implementing behavioural principles to design learning experiences.

Contingency theory posits that there is no universally optimal leadership style and that the most effective approach depends on specific scenarios and variables. Contingency theory is often known as situational leadership theory. According to (Colquitt et al., 2015), contingency theory in a corporation is an open system that involves interactions to adapt and regulate the environment to sustain commercial operations. Contingency theory suggests that an organization's efficiency depends on how well it aligns with the environmental systems it functions within (Agarwala, 2019; McMenemy, 2019; Suki, 2017). Contingency theory is the primary and most renowned framework for elucidating differences in organizational structure. According to (Hua, 2021) contingency theory, leadership effectiveness can vary depending on the specific conditions and situations. The leader's performance may change when placed in different circumstances or when external factors shift. The environment has also changed—four specific terms of contingency theory.

### 3.1 The four-term contingency principle

1. motivation: Human behaviour is classified as either response behaviour or actor behaviour. Respondent behaviour is elicited by specific stimuli and results in an automatic response, like an individual's immediate reply. Respondent behaviour typically consists of three components: antecedent stimuli, operant behaviour, and behavioural consequences, also referred to as the three-term contingency (Gardner, 1985; Liu, 2022). The three components of operant behaviour include seeing food, ingesting food, and feeling full. Satiety increases the likelihood of finding and consuming food in the future, as indicated by three contingency variables in micro-evolutionary terms. The four contingency terms consist of three contingency terms and the current motivational operational condition of the actor, which are combined to form the four contingency terms. The motivating action in the case provided is When hungry, individuals perceive food, consume it, and reach satiety.

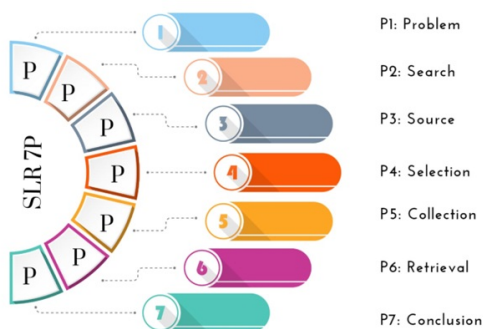


Figure 1. SLR 7P diagram technique

2. Reinforcement and punishment: Consequences can be categorized into two types: reinforcement and punishment. Reinforcement is a post-behaviour occurrence that boosts the probability of the behaviour reoccurring. If a student answers a teacher's question in class and receives praise, they are more likely to answer the teacher's future questions when asked. Student behaviour in responding to questions has a substantial enhancing effect (Nesbitt et al., 2015; Quedsted et al., 2013; Webb, 2006). How praise is delivered significantly impacts the likelihood of future actions. Praising positive responses increases the probability of students receiving favourable reactions in the future while praising proper responses increases the possibility of students answering questions correctly. However, more is needed to guarantee an overall rise in responses. The distinction between the two significantly impacts the attainment of curriculum goals by emphasizing the necessity of prompting students to respond constructively to inquiries to assess their comprehension and guide them towards autonomously arriving at the accurate solution through critical thinking and evaluation until arriving at the term "Correct." Consequences of the respondent's behaviour may include punishment. It details the events that happen right after a behaviour and decreases the chances of the conduct happening again (Cheema, 2020; Leksono & Sungkawati, 2018; Tapingkae, 2020). In the classroom, if a student answers a teacher's question wrong, the teacher could suggest that the student be more attentive in earlier lessons. The teacher's reaction serves as a deterrent to prevent students from providing unsuitable responses to the teacher's inquiries in the future, therefore acting as a punishment for the student's original response.

### 3.2 Three-Term Contingencies in the Classroom

Using three periods of temporal contingency in the classroom means that teachers can use punishments to influence specific student behaviour. One key measure of a class's performance is how frequently students initiate learning behaviours. The outcomes attained during the three semesters will play a significant role in determining the success of the learning reform. Using a split-class methodology, students participated fully in discussions, provided presentations, role-played, and answered questions for almost half of the class period.

Descriptive Compliments: Teachers who use descriptive praise engage students, reward learning behaviours,

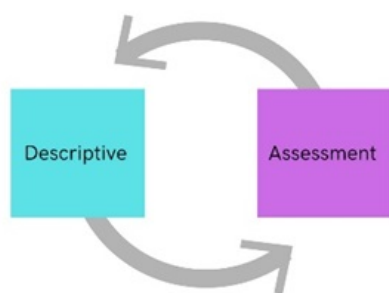


Figure 2. Descriptive Compliments

and foster self-management and self-motivation. Agreement on formative assessment points: Subclass exam results include formative evaluations, where teachers can award points for curriculum-expected behaviour. Students can divide their results into two categories by comparing their performance to their group's opponents.

### 3.3 Application of motivating operations in the classroom

Motivational operations refer to the state in which a person is driven to achieve specific results. Strategically arranging the classroom environment and instructional materials can increase the importance of reinforcing objects and motivate students to engage in desired behaviours. Student behaviour that is aligned with teacher expectations in the classroom has a direct impact on achieving learning goals. In particular, students must be able to recognize signs of error and actively reflect on these signs. Deliberately introducing errors into educational materials or presentation equipment without informing students is a motivational strategy. Some students who are skilled and have the courage will point out that there are errors in the class material or presentation system provided by the teacher. Suppose another goal of classroom instruction is to read problem-solving manuals thoroughly and become proficient in correct problem-solving techniques. In that case, the classroom atmosphere and learning sessions can be set up as a red-blue confrontation, with the red side creating errors and the blue side solving problems. Both parties must be motivated to truly understand the error phenomenon and problem-solving methods to successfully identify and correct errors, perform appropriate problem-solving, perform accurate cross-checks, and achieve the desired results.

### 3.4 Token Systems in the Classroom

Education aims to guide students through the learning process to achieve predetermined learning objectives. Some experts believe that learning involves acquiring a range of skills and attitudes. Learning starts in infancy with the development of basic skills like grasping a milk bottle and bonding with the mother, continuing till the end of life. Human learning capacity is a crucial trait that sets this species apart from other animals. Typically, teachers use a paradigm in the classroom where they provide direct explanations about the content being addressed, which pupils readily accept. Classical debates and Q&A sessions are sometimes conducted, but the teacher plays a more prominent role in the learning process than the pupils. An effective learning model, such as the cooperative learning model, is necessary to encourage active student participation, individual accountability, and peer collaboration. The collaborative learning model involves instructional techniques where students engage in small groups to assist each other in understanding the subject matter (Slavin R, 2008: 4).

Upon direct observation, numerous students demonstrated a need for attentiveness throughout the teacher's explanation of the content, resulting in an inability to answer the teacher's questions during feedback sessions accurately. Only confident students can accurately answer a question posed by the teacher. Many students require assistance in effectively engaging with their peers while learning. The time token learning model created by Arends is a unique learning approach aimed at enhancing the ac-

tive engagement of all pupils. Arends (1997: 137) asserts that time tokens are a skill utilized in cooperative learning. This tries to address the issue of unequal participation in group work by encouraging students to collaborate and support each other in small groups, thus preventing some students from dominating while others remain silent. Several instructional approaches are tailored to students' learning preferences to maximize learning outcomes. Educators should remember that no single learning paradigm is universally suitable for all circumstances and contexts.

When selecting a learning model, consider the students' condition, teaching materials, available media facilities, and the teacher's condition. An alternate learning model that can be selected and utilized is the Time Token learning model. This presentation offers an introductory overview of concepts, alterations, and syntax methods, allowing the teacher to adjust based on the specific circumstances and conditions. One learning model that is anticipated to enhance the active engagement of all students is the learning model. Arends developed time tokens as a skill for participation in cooperative learning to address the issue of equal opportunity in group work, ensuring that all students have a chance to contribute and preventing any one student from dominating the discussion or being silent. The time token learning model provides the participation of all students and is a practical approach to enhance individual accountability in group discussions. This learning approach aims to address issues related to student engagement in class, particularly those who are passive during group discussions and traditional lectures, while also decreasing the prevalence of students who monopolize the conversation.

### 3.4.1 Theoretical Analysis of Formative Assessment to Enhance Learning Behaviour

1. **Token System:** The token system is called Token Economy. Classroom assessment uses a token system, explained. The final course grade includes students' performance grades. General education uses score-based grading systems, but additional research is needed to understand system tokens' considerable impact on student behaviour. The token system works by exchanging tokens to build reserves. Graduation achievement drives high learning behaviour to get the best mark on each assessment exam. The exam is designed to need good grades on each unit of performance. Exam administration requires high marks, so students study frequently to get them. Success in each learning module is necessary for graduation and successful performance. Current changes can be interpreted in two dimensions: time and process. Exams are usually one-time assessments that affect long-term processes. One exam after study yields valid grades. The token system was not designed to assess student learning before the course exam because tokens are distributed afterward. The process component emphasizes disciplines that develop student perspectives, values, and creativity. These basic skills are developed by continuous assessment, improvement, and development through learning activities. Refining the evaluation is more important than increasing session frequency for token systems. Process indicators can be assessed throughout the learning process to

help instructors alter lesson plans and empower students to change their efforts to meet learning goals.

2. **Schedules of Reinforcement:** The scoring and scoring results are displayed as a single amplification, with each small horizontal line on all curves indicating a valid score. The four reinforcement schedules in Table 1.

### 3.4.2 Key Points for Implementing the Token System in the Classroom

The data above reveals the correlation between the token system's design and formative assessment.

1. **Basic Design Elements,** explained in Figure 3
2. **Advanced Design Essentials**
  - a. **Precautions for Using Punitive Tokens.** Incentives are often used rather than punishments. Punishment, although effective in reducing undesirable behaviour, does not contribute to student's development of good skill acquisition (Wiggers & Paas, 2022).. Punitive measures may be necessary in extreme circumstances to ensure the achievement of educational goals (Darling-Hammond et al., 2020). For example, in safety-focused courses, red lines are set to indicate essential learning points. Suppose these limits are exceeded during assessment due to unforeseen circumstances or human error. In that case, token deductions should be applied one-to-one, meaning one penalty per incident. It is essential to eliminate red-line violations to understand that punishment is intended to eradicate bad behaviour and ensure workplace safety and that eliminating just one lousy behaviour does not meet our training goals. Mandatory penalty assessments are practicable. Despite their large size, acquiring and demonstrating correct skills can provide significant benefits, and differentiation is crucial in achieving learning goals.
  - b. **Key Elements of a Wide-Range Token System.** The token system can be applied not only to one class but also to a broader scope. Engineering schools can improve students' independent learning and self-discipline by categorizing them by skill groups and assigning them to specific levels (Haleem et al., 2022). This can be done by providing students with armbands indicating their level and appropriate privileges for each level. In this context, "privilege" means honourable recognition of expertise in business capabilities. Privileges can also be granted to improve library services, such as increasing book collections, extending operating hours, giving priority access to rare volumes, and aligning with the curriculum (Dunlosky et al., 2013). Access to online resources, more significant interaction with laboratory materials, and similar benefits are considered "privileges" that align with students' skill levels and can help them advance to higher proficiency levels and depth of study.

Table 1. Schedules of Reinforcement

No	schedules	reinforcement schedules
1	Data	The data used here is from graphs from behavioural studies as an analogy to show that reinforcement schedules ultimately constrain and influence human learning behaviour.
2	Learning Outcomes	The best learning outcomes and goal achievement come from more learning sessions. When the number of assessment sessions is constant, the pace of change, or the number of learning days as a benchmark, leads to the most learning for a student in a session.
3	Comprehending Reinforcement	Understanding reinforcement: Every evaluation has positive and negative reinforcement. High exam results reinforce good academic behaviour and encourage active learning. Test scores constitute negative reinforcement, urging students to avoid poor results and study hard. Fixed interval reinforcement is used in standard testing. Ratio strain occurs when students study intensely before a test, less afterward, and more before the next exam.
4	Conclusion	In conclusion, operant reinforcement can lengthen the engagement period with fixed interval reinforcement. This is often achieved through reinforcement programs and frequency or reaction time-based rewards. Any reward can change behaviour, but response patterns gradually disappear without it. Unusual or unpredictable incentives eliminate the behaviour.

### 3.4.3 Using group contingencies in the classroom

Advances in engineering technology require students and applicators to collaborate with team members to improve the efficient and effective delivery of engineering services. Teamwork abilities at the learning level can function as an indicator of the goals of the learning process. Behavioural concepts can provide practical strategies for instructing students to collaborate in teams

Most people agree that cooperative learning is better than individual learning. It enhances student interactions, social skills, learning results, and higher-order thinking. Behavioural principles state that each person's and the group's behaviour can affect the student group. Students who communicate well with the teacher, answer questions well, and express in-depth analysis might affect the teacher's professional evaluation and class behaviour. Dependent group contingency rewards all pupils if one accomplishes the goal.

Students who consistently finish assignments well can impact a teacher's judgment of students' understanding and lesson pace. All students meet the criterion and benefit. This is an independence group contingency. Those who complete the conditions obtain prizes independently, but all students must comply. Dependent group contingencies encourage student interaction; independent group contingencies employ tokens to ensure accountability; and interdependent group contingencies use peer pressure to boost performance. The reliance effect will reduce rewards if one person fails. Individual differences do not affect The independence effect, whereas individual performance affects the dependent group contingency.

The study was designed so that participants were randomly allocated to groups to collaborate on their group reports. The second group is less strong since they require lessons for help. The instructor can establish comprehensive group contingencies based on

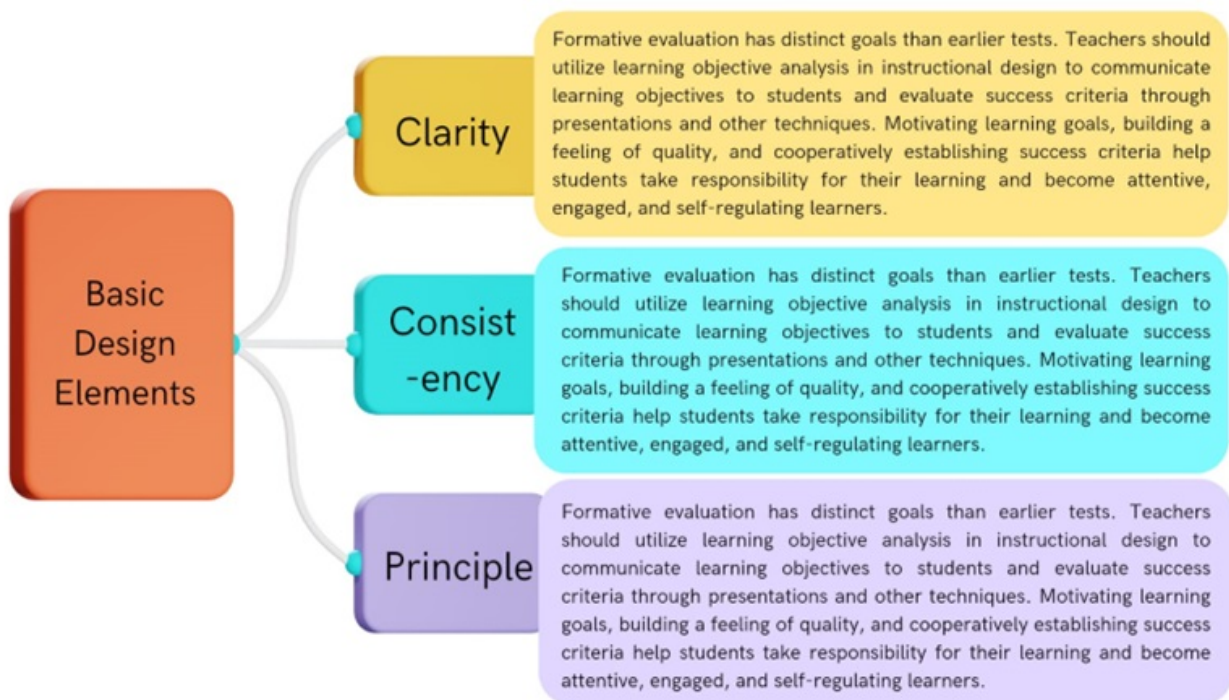


Figure 3. Basic Design Elements

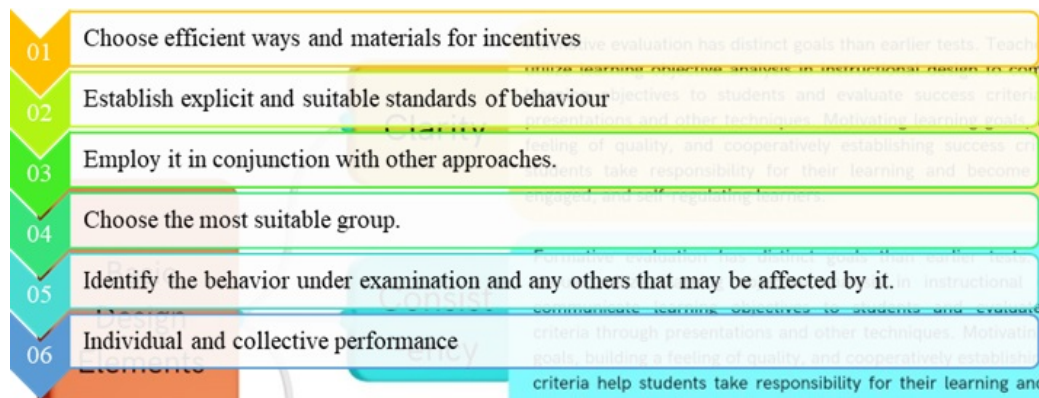


Figure 4. design group contingencies

the circumstances. If the second group's report aligns with the rubric criteria, the teacher might conclude that all three groups excelled in the evaluation. Implementing group contingencies will enhance student participation and offer intellectual support and aid to the second group. Based on empirical research, the following empirical findings can help us design group contingencies more effectively in classroom design Figure 4.

#### 4. CONCLUSION

Conventional methods in this scenario indicate that behavioural learning approaches prioritize discipline and instruction, thereby impeding the development of interactive teaching connections. The research starts by analyzing the fundamental principles of behaviourism, evaluating attitudes or behaviour using different examples of changes in interactive learning, and explaining the implementation of suitable behaviour in each learning design process from a theoretical perspective. This study provides detailed insights into utilizing 4-term contingencies involving motivational operations, token systems, and group contingencies. It highlights the influential role of behavioural theory in shaping the execution of educational reforms in the classroom, drawing from theoretical and practical perspectives. Behavioural principles can shape academic conclusions. Moreover, applied behaviour analysis can be used to achieve functional classroom learning improvement.

#### References

Agarwala, R. (2019). Religiosity and consumer behavior: a summarizing review. *Journal of Management, Spirituality and Religion*, 16(1), 32–54. <https://doi.org/10.1080/14766086.2018.1495098>

Alexander, J. C., & Colomy, P. (2019). "Institutionalization" and "Collective Behavior": Points of Contact Between Eisenstadt's Functionalism and Symbolic Interactionism. *Comparative Social Dynamics*. <https://doi.org/10.4324/9780429044755-23>

Bailey, N. W. (2018). Indirect genetic effects in behavioral ecology: Does behavior play a special role in evolution? *Behavioral Ecology*, 29(1), 1–11. <https://doi.org/10.1093/beheco/arx127>

Blanke, O. (2015). Behavioral, Neural, and Computational Principles of Bodily Self-Consciousness. *Neuron*, 88(1), 145–166. <https://doi.org/10.1016/j.neuron.2015.09.029>

Camargo, S. P. H. (2014). A review of the quality of behaviorally-based intervention research to improve social interaction skills of children with ASD in inclusive settings. *Journal of Autism and Developmental Disorders*, 44(9), 2096–2116. <https://doi.org/10.1007/s10803-014-2060-7>

Colquitt, J. A., Lepine, J. A., & Wesson, M. J. (2015). *Organizational Behavior: Improving Performance and Commitment*. [zo-nws.nl](http://zo-nws.nl)

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2). <https://doi.org/10.1080/10888691.2018.1537791>

Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving Students' Learning With Effective Learning Techniques: Promising Directions From Cognitive and Educational Psychology. *Psychological Science in the Public Interest*, 14(1), 4–58. <https://doi.org/10.1177/1529100612453266>

Ehde, D. M. (2014). Cognitive-behavioral therapy for individuals with chronic pain: Efficacy, innovations, and directions for research. *American Psychologist*, 69(2), 153–166. <https://doi.org/10.1037/a0035747>

Engelhard, G. (2013). Invariant measurement: Using rasch models in the social, behavioral, and health sciences. *Invariant Measurement: Using Rasch Models in the Social, Behavioral, and Health Sciences*, 1–288. <https://doi.org/10.4324/9780203073636>

Fuadi, L. (2017). Influence of Behavioral Counseling Techniques, Token Economy and Parent's Parenting Class of Behaviour Prosocial X Syamsulhude Tegallinggah. *International Journal of Psychosocial Rehabilitation*.

Garcia, E., & Hoang, D. (2015). Positive Behavior Supports: Using Class Dojo as a Token Economy Point System to Encourage and Maintain Good Behaviors. Online Submission. <https://eric.ed.gov/?id=ED561860>

- Gardner, M. P. (1985). Mood states and consumer behavior: A critical review. *Journal of Consumer Research*. <https://academic.oup.com/jcr/article-abstract/12/3/281/1856870>
- Granic, I. (2006). Toward a comprehensive model of antisocial development: A dynamic systems approach. *Psychological Review*, 113(1), 101–131. <https://doi.org/10.1037/0033-295X.113.1.101>
- Grimmelikhuijsen, S. (2017). Behavioral Public Administration: Combining Insights from Public Administration and Psychology. *Public Administration Review*, 77(1), 45–56. <https://doi.org/10.1111/puar.12609>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Hayes, A. (2020). Conditional Process Analysis: Concepts, Computation, and Advances in the Modeling of the Contingencies of Mechanisms. *American Behavioral Scientist*, 64(1), 19–54. <https://doi.org/10.1177/0002764219859633>
- Hua, Y. (2021). How to leverage the role of social capital in pro-environmental behavior: A case study of residents' express waste recycling behavior in China. *Journal of Cleaner Production*, 280. <https://doi.org/10.1016/j.jclepro.2020.124376>
- Lin, T. (2016). Peer interaction in rural preschool classrooms: Contributions of children's learning-related behaviors, language and literacy skills, and problem behaviors. *Early Childhood Research Quarterly*, 37, 106–117. <https://doi.org/10.1016/j.ecresq.2016.04.001>
- Lister, C. (2014). Just a fad? gamification in health and fitness apps. *JMIR Serious Games*, 2(2). <https://doi.org/10.2196/games.3413>
- Liu, Y. (2022). Can the Leading Officials' Accountability Audit of Natural Resources policy stimulate Chinese heavy-polluting enterprises' green behavior? *Environmental Science and Pollution Research*, 29(31), 47772–47799. <https://doi.org/10.1007/s11356-022-18527-1>
- McClelland, D. (1998). Identifying competencies with behavioral-event interviews. *Psychological Science*, 9(5), 331–339. <https://doi.org/10.1111/1467-9280.00065>
- McMenemy, D. (2019). Character Building in Children's Online Information Behaviours: Applying a Virtue Epistemology Perspective to Information Literacy. *Communications in Computer and Information Science*, 989, 73–82. [https://doi.org/10.1007/978-3-030-13472-3\\_7](https://doi.org/10.1007/978-3-030-13472-3_7)
- McPhail, C., & Rexroat, C. (1979). Mead vs. Blumer: The divergent methodological perspectives of social behaviorism and symbolic interactionism. *American Sociological Review*. <https://www.jstor.org/stable/2094886>
- Nesbitt, K. T., Farran, D. C., & Fuhs, M. W. (2015). Executive function skills and academic achievement gains in prekindergarten: Contributions of learning-related behaviors. *Developmental Psychology*. <https://psycnet.apa.org/record/2015-22645-001>
- Parasuraman, R. (2008). Situation Awareness, Mental Workload, and Trust in Automation: Viable, Empirically Supported Cognitive Engineering Constructs. *Journal of Cognitive Engineering and Decision Making*, 2(2), 140–160. <https://doi.org/10.1518/155534308X284417>
- Perski, O. (2017). Conceptualising engagement with digital behaviour change interventions: a systematic review using principles from critical interpretive synthesis. *Translational Behavioral Medicine*, 7(2), 254–267. <https://doi.org/10.1007/s13142-016-0453-1>
- Quested, T. E., Marsh, E., Stunell, D., & Parry, A. D. (2013). Spaghetti soup: The complex world of food waste behaviours. *Resources, Conservation and ...* <https://www.sciencedirect.com/science/article/pii/S0921344913000980>
- Reichow, B. (2012). Early intensive behavioral intervention (EIBI) for young children with autism spectrum disorders (ASD). *Cochrane Database of Systematic Reviews (Online)*, 10.
- Roggen, D. (2010). Collecting complex activity datasets in highly rich networked sensor environments. *INSS 2010 - 7th International Conference on Networked Sensing Systems*, 233–240. <https://doi.org/10.1109/INSS.2010.5573462>
- Sherin, M. (2016). Understanding behaviors of students with emotional behavioral disorders while exposed to a digital token economy. [search.proquest.com](https://search.proquest.com/openview/2598a9e2a82557e8d0882db4314a910b/1?pq-origsite=gscholar&cbl=18750). <https://search.proquest.com/openview/2598a9e2a82557e8d0882db4314a910b/1?pq-origsite=gscholar&cbl=18750>
- Stone, B. L. (1982). Saussure, Schutz, and symbolic interactionism on the constitution and interpretation of signitive behavior. *Studies in Symbolic Interaction*. <https://psycnet.apa.org/record/1983-20738-001>
- Suki, A. (2017). Assessing sharia compliance medical destination behaviour: A medical tourism perspective. *Pertanika Journal of Social Sciences and Humanities*, 25, 203–213.
- Thelen, E. (1991). Hidden skills: A dynamic systems analysis of treadmill stepping during the first year. *Monographs of the Society for Research in Child Development*, 56(1). <https://doi.org/10.2307/1166099>
- Tomljenovic, H. (2021). Cognitive and emotional factors in health behaviour: Dual-process reasoning, cognitive styles and optimism as predictors of healthy lifestyle, healthy behaviours and medical adherence. *Current Psychology*, 40(7), 3256–3264. <https://doi.org/10.1007/s12144-019-00268-z>
- Vervliet, B. (2013). Fear extinction and relapse: State of the art. *Annual Review of Clinical Psychology*, 9, 215–248. <https://doi.org/10.1146/annurev-clinpsy-050212-185542>
- Vigliocco, G. (2011). Nouns and verbs in the brain: A review of behavioural, electrophysiological

cal, neuropsychological and imaging studies. *Neuroscience and Biobehavioral Reviews*, 35(3), 407–426. <https://doi.org/10.1016/j.neubiorev.2010.04.007>

Volpp, K. G. (2021). Behaviorally Informed Strategies for a National COVID-19 Vaccine Promotion Program. *JAMA - Journal of the American Medical Association*, 325(2), 125–126. <https://doi.org/10.1001/jama.2020.24036>

Watson, J. B. (2017). Behaviorism. books.google.com. <https://books.google.com/books?hl=en&lr=&id=6GRQDwAAQBAJ&oi=fnd&pg=PP1&dq=loose+part&ots=BmXNFULcDn&sig=0mk2n1rhqkZaZRCBkbSDWMVQUTw>

Webb, T. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, 132(2), 249–268. <https://doi.org/10.1037/0033-2909.132.2.249>

Wiggers, M., & Paas, F. (2022). Harsh Physical Discipline and Externalizing Behaviors in Children: A Systematic Review. *International Journal of Environmental Research and Public Health*, 19(21), 14385. <https://doi.org/10.3390/ijerph192114385>