

Spiritual Learning Analytics Model for Digital Learning Evaluation in Christian Religious Education: Integrating Authentic Assessment, Data Analytics, and Inclusivity for Children with Special Needs (ABK)

Afriani Manalu

Program Doktor Pendidikan Agama Kristen , Universitas Kristen Indonesia

Corresponding Author: Afriani Manalu afrianimanalu2103@gmail.com

ARTICLE INFO

Keywords: Spiritual Learning Analytics, PAK, authentic assessment, learning analytics, inclusivity

Received : 09, May

Revised : 12, June

Accepted: 31, July

©2026 Manalu : This is an open-access article distributed under the terms of the [Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).



ABSTRACT

The learning analytics approach that is developing in digital education generally emphasizes the use of learning data to increase the effectiveness of evidence-based pedagogy. The research method used is a conceptual literature study based on a conceptual literature study with a thematic analysis approach to relevant academic sources, including learning analytics literature, authentic assessment, inclusive education, and Christian educational theology. The results show that the SLA Model has four main components, namely input, process, output, and outcome, which form a continuous learning evaluation cycle. This model provides a theoretical contribution in expanding the scope of learning analytics into the spiritual dimension as well as a practical contribution in designing a more inclusive digital learning evaluation for ABK.

INTRODUCTION

The development of digital technology has fundamentally transformed the educational landscape, including in the practice of learning evaluation in various disciplines. In the context of Christian Religious Education (PAK), this transformation presents significant epistemological challenges, particularly related to how to assess the growth of faith that is personal, relational, and transformative. So far, the evaluation of PAK learning is still dominated by a cognitive approach oriented towards mastering theological knowledge, such as memorization of verses and doctrinal understanding. This approach tends to be reductionistic and is not adequate to represent the essential goals of PAK, namely the formation of Christian character and the transformation of students' lives.

As learning analytics develops, modern education offers new opportunities in leveraging digital learning data to improve the quality of teaching in a more systematic, adaptive, and evidence-based manner. However, most of the implementation of learning analytics still focuses on cognitive and behavioral aspects of learning that can be measured quantitatively, so the spiritual dimension that is the core of PAK learning has not received adequate attention. At the same time, the demand for inclusive education is getting stronger, especially in ensuring the participation of Children with Special Needs (ABK) in the entire learning and evaluation process. Although digital technology has great potential to improve accessibility, the integration between digital learning evaluation, data analytics, and the principle of inclusivity for ABK has not yet been developed conceptually or operationally in the context of PAK.

These conditions indicate a significant conceptual gap in the literature. Until now, there is no digital learning evaluation model that simultaneously integrates the spiritual dimension, the use of learning analytics, and the principles of inclusive education in one complete framework. As a result, the existing evaluation approach has not been able to fully answer the complexity of the goals of Christian Religious Education in the digital era which is not only oriented towards academic achievement, but also on faith growth, character building, and educational justice for all students.

Based on these gaps, this study aims to develop a conceptual framework of Spiritual Learning Analytics as a holistic and inclusive digital learning evaluation model in Christian Religious Education. In particular, this study aims to: (1) conceptualize Spiritual Learning Analytics as a framework for evaluating digital learning in Christian Religious Education; (2) analyze how the integration of authentic assessment and learning analytics can be used to evaluate faith growth more holistically; and (3) describe the role of inclusive technology in supporting the participation of Children with Special Needs (ABK) in the digital learning evaluation process. The model developed is based on the theological concept of *Imago Dei*, which affirms that every individual has equal dignity and is entitled to a fair, inclusive, and meaningful education.

Through the development of this conceptual framework, this article is expected to make a theoretical contribution by expanding the study of the evaluation of digital learning in Christian Religious Education through the integration of theological perspectives, learning analytics, and inclusive

education. In addition, this article also offers practical contributions in the form of conceptual models that can be used as a reference for educators in designing a more reflective, inclusive, and transformative digital learning evaluation system.

THEORETICAL REVIEW

The development of Learning Analytics (LA) has become one of the important innovations in digital education because it allows the use of learning data to understand, predict, and improve the learning process of students systematically. Siemens and Baker define learning analytics as the process of collecting, measuring, analyzing, and reporting data about students and their learning context with the aim of optimizing the learning process and the environment in which learning takes place. In line with that, Dawson, Gašević, and Siemens emphasized that the essence of learning analytics does not solely lie in data management, but in efforts to improve the quality of learning through evidence-based pedagogical decision-making. Various studies show that the application of learning analytics can help educators identify students who have learning difficulties early on, personalize learning, and provide faster and more accurate feedback through the analysis of student activities on the Learning Management System (LMS).

However, most research on learning analytics is still oriented towards quantitative academic indicators, such as grades, frequency of access to materials, discussion participation, and assignment completion. This approach has not been able to capture the affective and spiritual dimensions that are the main goals in Christian Religious Education (PAK). Therefore, it is still necessary to develop a learning analytics model that is able to integrate the spiritual dimension so that learning evaluation does not only focus on academic achievements, but also on the growth of faith and the formation of students' character.

In addition to learning analytics, authentic assessments are also developing as a more comprehensive evaluation approach than traditional assessments. Wiggins explained that authentic assessments assess students' abilities through tasks that represent real situations so that students can demonstrate mastery of knowledge, skills, and attitudes contextually. In the digital learning environment, authentic assessments are increasingly developing through the use of electronic portfolios, reflection journals, collaborative projects, and multimedia presentations. Barrett explained that digital portfolios are able to document students' learning progress in an ongoing manner while encouraging the practice of self-reflection. In line with that, Boud stated that reflection journals are an effective medium to develop students' reflective abilities on the learning experiences they experience.

In the context of Christian Religious Education, authentic assessments have a very high relevance because the purpose of learning is not only to develop theological knowledge, but also to shape Christian character, maturity of faith, and the implementation of Gospel values in daily life. Thus, authentic assessments provide a richer source of data than written tests so that they can be

an important foundation in the development of holistic digital learning evaluations.

Studies on inclusive education also show significant developments. UNESCO emphasizes that inclusive education is an approach that ensures that every student has equal learning opportunities without discrimination, including Children with Special Needs (ABK). The development of digital technology provides an increasing opportunity to realize inclusive education through the use of assistive technology such as screen readers, speech-to-text, voice recognition, automatic subtitles, and various other accessibility features. Fitriyanto, Hakim, and Permadi's research shows that digital technology contributes to increasing the accessibility of learning for students with disabilities even though they still face various challenges in their implementation.

In the perspective of Christian Religious Education, inclusivity is not only understood as a pedagogical principle, but also as an implementation of theological values rooted in the concept of *Imago Dei*. Wolterstorff emphasized that every human being has equal dignity because they are created in the image of God, so that every student, including ABK, has the right to receive fair and meaningful educational service. Therefore, the development of digital learning evaluation needs to ensure that all students get the same opportunity to demonstrate their academic competence and spiritual development.

Based on the literature review, it can be concluded that research on learning analytics, authentic assessment, and inclusive education has developed widely, but the three fields are still studied separately. Learning analytics research is more oriented towards optimizing academic data, authentic assessment research focuses on contextual evaluation, while inclusive education research emphasizes technological accessibility for ABK. Until now, no conceptual model has been found that systematically integrates these three domains in the context of Christian Religious Education. In addition, the spiritual dimension as the main goal of PAK has also not become an integral part of the development of learning analytics. Based on these gaps, this study developed the Spiritual Learning Analytics (SLA) Model as a conceptual framework that integrates authentic assessment, learning analytics, inclusive technology, and the theological foundation of *Imago Dei* to produce a more holistic, inclusive, and transformative evaluation of digital learning.

METHODOLOGY

This study uses a qualitative approach with a conceptual study design based on literature review. This approach is used to develop the Spiritual Learning Analytics (SLA) Model as a digital learning evaluation framework in Christian Religious Education (PAK) that integrates authentic assessment, data analytics, and inclusivity for Children with Special Needs (ABK).

The data source of this study consists of 23 scientific literature, which includes 13 scientific articles and 10 academic books. The scientific articles consist of international journals such as the *Journal of Learning Analytics*, *Computers & Education*, *Teaching and Teacher Education*, *American Behavioral Scientist*, as well as national journals such as *Bitnet: Journal of Information Technology*.

Education and the Academic Review of Journal and Innovation, including the proceedings of international conferences related to learning analytics and educational technology. Meanwhile, the books used include fundamental works in Christian education, theology, assessment, and education, such as Wiggins, Fowler, Groome, Wolterstorff, Westerhoff, as well as UNESCO documents on inclusive education.

Data collection was carried out through a literature study by examining selected literature relevant to three main domains, namely learning analytics, authentic assessment, and inclusive education in the perspective of Christian Religious Education. All sources are systematically analyzed to build a conceptual synthesis that results in a holistic, inclusive, and transformative learning evaluation model.

Data analysis was carried out using content analysis and thematic analysis techniques, with the following stages: (1) data reduction, (2) concept categorization, (3) theoretical interpretation, and (4) SLA conceptual model synthesis. This process allows for cross-disciplinary integration between pedagogy, educational technology, and Christian theology. The validity of the data is maintained through triangulation of sources, namely by comparing various perspectives from 13 scientific articles and 10 academic books, so that conceptual consistency and theoretical validity are obtained in the development of the Spiritual Learning Analytics model.

RESULTS AND DISCUSSION

Conceptualization of Spiritual Learning Analytics

The development of *learning analytics* in the last decade has opened up new opportunities for improving the quality of learning through the systematic use of educational data. In general, *learning analytics* is defined as the process of collecting, measuring, analyzing, and reporting data about learners and their learning context with the aim of understanding and optimizing the learning process. This approach has been shown to be effective in improving learning personalization, detecting learning difficulties early, and supporting evidence-based pedagogical decision-making.

However, in the context of Christian Religious Education (PAK), the application of *conventional learning analytics* faces significant epistemological limitations. The primary focus on easily quantifiable cognitive and behavioral indicators tends to ignore the spiritual dimension that is precisely at the heart of the purpose of faith education. The reduction of spirituality to mere measurable variables has the potential to result in a superficial and instrumentalist understanding of the experience of faith, which is inherently personal, relational, and transformative. Therefore, a conceptual framework is needed that is able to bridge the gap between data-driven analytical approaches and the complexity of spiritual growth.

Based on these needs, this article proposes the concept of Spiritual Learning Analytics (SLA) as a development of *learning analytics* that integrates the spiritual dimension in the learning evaluation process. Spiritual Learning Analytics can be defined as a systematic approach in the collection and analysis

of learning data that aims to understand and support the growth of students' faith through the integration of cognitive, affective, social, and spiritual indicators in a holistic pedagogical and theological framework.

This idea is synthesized from the *learning analytics* literature which emphasizes that learning data should not reduce the complexity of the learning process to just numbers, but must still consider the reflective and contextual dimensions of the learning experience. See George Siemens and Ryan, S. J. d. Baker, "Learning Analytics and Educational Data Mining: Towards Communication and Collaboration," in *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge* (New York: ACM, 2012); Simon Dawson, Dragan Gašević, and George Siemens, "Let's Not Forget: Learning Analytics Are About Learning," *Journal of Learning Analytics* 2, no. 1 (2015): 6–8.

This approach is in line with the reflective assessment literature that emphasizes the importance of journals, digital portfolios, and reflection practices in understanding student development more fully and deeply. See Helen C. Barrett, *Researching Electronic Portfolios and Learner Engagement* (2007); David Boud, "Using Journal Writing to Enhance Reflective Practice," *New Directions for Adult and Continuing Education* (2001).

In the context of Christian faith education, spiritual development is understood as a dynamic, relational, and transformative process, so it cannot be reduced to an absolute or static measure. See James W. Fowler, *Stages of Faith: The Psychology of Human Development and the Quest for Meaning* (San Francisco: Harper & Row, 1981); John H. Westerhoff III, *Will Our Children Have Faith?* (New York: Seabury Press, 1976); Kenneth I. Pargament and Benjamin J. Zinnbauer, "Religiousness and Spirituality," *Journal of Social Issues* 61, no. 4 (2005)

In contrast to conventional *learning analytics* that focus on quantitative data, SLA adopts a mixed-methods approach, which combines quantitative data analysis such as learning participation and engagement rates with qualitative data, including reflective narratives and documentation of spiritual experiences. This integration allows for a more comprehensive understanding of learner development, while avoiding the reductionism that often arises in a purely numbers-based approach.

Philosophically, SLA places data as a pedagogical servant, not as an end goal. This principle affirms that the interpretation of data must always be within an ethical and theological framework that respects human dignity as *Imago Dei*. Thus, the use of data analytics is not intended to control or label learners, but rather to support their personal and spiritual growth. This perspective also demands transparency, privacy protection, and active participation of students in understanding and reflecting on their own learning data.

The conceptual novelty of Spiritual Learning Analytics lies in its systematic integration between three main domains: (1) authentic assessments, which provide contextual evidence of faith experiences; (2) data analytics, which allows for continuous monitoring and pedagogical intervention; and (3) theological foundations, in particular the concept of *Imago Dei*, which affirm the principles of justice and inclusivity in education. This integration makes SLA not

only an innovation in the field of educational technology, but also a significant contribution to the development of learning evaluation in religious education.

While it offers great potential, SLA implementation also faces a number of critical challenges. First, there is the risk of spiritual reductionism, which is the tendency to simplify complex experiences of faith into measurable indicators. Second, the issue of ethics and data privacy is a major concern, considering the sensitivity of information related to the spiritual reflection of students. Third, the success of SLAs is highly dependent on the data literacy and digital competence of educators, which require adequate training and institutional support. Therefore, the implementation of SLAs must be accompanied by a strong ethical and pedagogical framework to ensure that technology truly functions as a means of empowerment, not as a means of control.

Thus, Spiritual Learning Analytics offers a new paradigm in PAK's digital learning evaluation that is holistic, inclusive, and transformative. This concept not only expands the scope of *learning analytics*, but also makes a significant theoretical contribution in integrating educational technology with spiritual and theological dimensions. Through this approach, learning evaluation no longer functions just as an assessment mechanism, but as a means of reflection and assistance in the journey of students' faith.

Integration of Authentic Assessments in Digital Evaluation

Authentic assessments have been widely recognized as an assessment approach that is able to represent learners' competencies more comprehensively compared to traditional assessments that are oriented towards written tests. Conceptually, authentic assessment refers to an evaluation process that assesses learners' abilities through tasks that reflect real-life practices, thus allowing for contextual demonstration of knowledge, skills, values, and disposition. Within the framework of constructivism, authentic assessments are seen as a means of assessing how learners build meaning through learning experiences that are relevant to the real world.

In the context of Christian Religious Education (PAK), this approach has very significant relevance. The main goal of PAK lies not only in the mastery of theological knowledge, but also in the growth of faith, the formation of Christian character, and the integration of gospel values in daily life. Therefore, assessments that rely solely on cognitive measurements such as memorization of verses or doctrinal understanding tend to be reductionistic and incapable of capturing the transformative dimension of faith education. Authentic assessments offer a more holistic alternative by assessing the tangible manifestations of faith in learners' actions and reflections.

Digital transformation in education further expands the potential for the implementation of authentic assessments. Digital learning environments provide a space for richer documentation, collaboration, and reflection through a variety of multimodal formats. Within the framework of Spiritual Learning Analytics (SLA), authentic assessments serve as an essential source of qualitative data to map students' spiritual development in a more in-depth and sustainable manner.

This integration allows evaluations that are not only summative, but also formative and reflective.

Some forms of implementation of authentic assessments in PAK digital evaluation include:

1. Digital Portfolio

A digital portfolio is a collection of learning artifacts that document a learner's spiritual journey longitudinally. Such artifacts can include reflections on faith, ministry works, social projects, and responses to ethical and theological issues. Within the framework of SLAs, digital portfolios provide rich qualitative data to analyze the development of faith and the integration of Christian values in learners' lives. In addition, this portfolio encourages the practice of *self-reflection* and *self-regulated learning*.

2. Online Reflection Journal

Online reflection journal serves as a contemplative space for students to express spiritual experiences, faith struggles, and meaning in the learning process. The narrative analysis of this journal allows educators to identify the depth of reflection, perspective shifts, and the development of spiritual awareness. Nevertheless, the interpretation of reflective data must be done with high ethical sensitivity, given its personal and intimate nature.

3. Community Service Projects (Service-Learning)

Community service projects are concrete manifestations of the integration of faith and social action. Through the *service-learning* approach, students not only understand Christian values conceptually, but also implement them in a real-life context. Digital documentation of service activities—such as reflective reports, photographs, or videos—is authentic evidence of students' spiritual transformation and social engagement.

4. Multimedia Presentations

in the form of videos, podcasts, or other digital media provide opportunities for students to convey a testimony of faith in a creative and communicative way. This multimodal format not only assesses cognitive comprehension, but also the ability to express one, empathize, and internalize values. In addition, multimedia technology allows for more inclusive adaptations for crew members, such as the use of subtitles, audio descriptions, or voice narration.

The integration of these various forms of authentic assessment in the Spiritual Learning Analytics model results in a holistic evaluation, covering cognitive, affective, social, and spiritual dimensions. This approach is in line with PAK's essential goal of emphasizing the transformation of life as a tangible manifestation of faith, not just a mastery of theological knowledge. Thus, learning evaluation not only serves as an assessment mechanism, but also as a means of assistance in the spiritual journey of students.

Nonetheless, the implementation of authentic assessments in the digital environment also faces a number of critical challenges. First, the complexity of the assessment demands the development of a clear and reliable evaluation rubric to maintain objectivity. Second, there is the potential for interpretive bias,

especially in assessing the spiritual dimension that is subjective. Third, the issue of technological accessibility for ABK must be the main concern so that authentic assessments do not create new exclusions. Therefore, the application of the Universal Design for Learning (UDL) principle is very important to ensure that every student has an equal opportunity to demonstrate their competence.

Theologically, the integration of authentic assessments in digital evaluations reflects the understanding that the Christian faith is incarnate in real action in the midst of life. The *Imago Dei* principle affirms that each individual has unique dignity and potential, so learning evaluations must respect the diversity of expressions of faith. Thus, authentic assessment serves not only as a pedagogical tool, but also as a theological practice that affirms the values of justice, inclusivity, and transformation.

In summary, the integration of authentic assessment in the Spiritual Learning Analytics model offers a more reflective, participatory, and transformative evaluation paradigm. This approach enriches PAK's digital learning evaluation practices by providing empirical evidence of faith growth while ensuring that the assessment process takes place in an inclusive and equitable manner. Therefore, authentic assessments are a key component in realizing learning evaluations that are not only academically informative, but also spiritually meaningful.

Data Analytics for Learning Quality Improvement

The development of digital technology has prompted the emergence of a new paradigm in learning evaluation known as *learning analytics*. This approach refers to the systematic process of collecting, measuring, analyzing, and interpreting learning data with the aim of understanding and optimizing the learning process of students. In the context of modern education, *learning analytics* not only serves as an evaluation tool, but also as an *evidence-based decision-making* mechanism that allows for more effective personalization of learning.

In a digital learning environment, especially through a *Learning Management System* (LMS), various types of data can be collected automatically and continuously. The data includes quiz and assignment scores, frequency and quality of participation in discussion forums, duration of access to learning materials, learning navigation patterns, and the level of completion of learning activities. The analysis of this data allows educators to gain deeper insights into the dynamics of students' learning processes, including early identification of learning difficulties, decreased motivation, and unexplored academic potential.

Through the use of analytics dashboards, educators can visualize learning trends and patterns in *real-time*. This information allows for timely and proportionate pedagogical interventions, such as providing individual guidance, adjusting learning strategies, or providing additional learning resources. The feedback generated becomes more personalized, specific, and contextual, thus supporting the development of *self-regulated learning*, which is the ability of students to independently plan, monitor, and evaluate their learning process.

In the context of Christian Religious Education (PAK), the use of data analytics has a broader dimension compared to other disciplines. In addition to

mapping cognitive development and learning behavior, data analytics can also be used to understand the dynamics of students' spiritual growth. For example, *text analytics* of reflection journals or digital portfolios can identify spiritual themes, depth of faith reflection, changes in ethical perspectives, and levels of involvement in faith communities. Thus, data analytics not only serves as an academic measurement tool, but also as an interpretive means to understand the spiritual journey of learners.

The integration of data analytics within the framework of Spiritual Learning Analytics (SLA) expands the function of *conventional learning analytics* by including the spiritual dimension as an integral part of learning evaluation. In this model, quantitative data such as participation rates and learning outcomes are combined with qualitative data sourced from narrative reflection and faith experience documentation. This *mixed-methods* approach allows for a more holistic understanding of student development, while avoiding the reductionism that can occur if spirituality is simplified to mere numerical indicators.

While it offers significant potential, the use of data analytics in digital learning evaluations also faces a number of critical challenges. First, there is the risk of pedagogical and spiritual reductionism, which is the tendency to assume that quantitatively measurable aspects of learning are more important than qualitative and reflective dimensions. Second, the issue of data privacy and security is a major concern, considering that learning data, especially related to spiritual reflection, is sensitive and personal. Third, there is the potential for the emergence of a culture of digital surveillance that can affect students' freedom of expression if it is not managed ethically.

Therefore, the implementation of Spiritual Learning Analytics requires a comprehensive ethical framework. This framework should include the principles of transparency in data collection and use, privacy protection through adequate security mechanisms, and granting autonomy to learners to understand and reflect on their own learning data. In addition, the interpretation of data must always be placed in a theological perspective that values human dignity as *Imago Dei*, so that technology functions as a means of empowerment, not as a means of control.

Pedagogically, the use of data analytics also requires an increase in data literacy for PAK educators. Teachers play the role of not only teachers, but also data analysts who are able to interpret information critically and use it to design meaningful learning interventions. Institutional support through training and the provision of technological infrastructure is a key factor in the successful implementation of this approach.

As a synthesis, data analytics within the framework of Spiritual Learning Analytics offers a new paradigm in improving the quality of PAK learning that is holistic, personalized, and inclusive. This approach allows for an evaluation of learning that focuses not only on academic achievement, but also on the growth of faith and the formation of Christian character. By paying attention to the ethical and theological dimensions, data analytics can be a strategic instrument in realizing transformative and equitable education.

Technological Inclusivity for Children with Special Needs (ABK)

Inclusive education is a tangible manifestation of a commitment to social justice and respect for human dignity. In the context of Christian Religious Education (PAK), inclusivity is understood not only as a pedagogical approach, but also as a theological call rooted in the concept of *Imago Dei*, which is the belief that every human being is created in the image and likeness of God. This principle affirms that every individual, including Children with Special Needs (ABK), has equal intrinsic value and the same right to access meaningful and participatory education. Therefore, the integration of inclusive technology in digital learning evaluation is an essential element to ensure that all learners can fully participate in the learning and assessment process.

Digital transformation in education opens up significant opportunities to overcome various access barriers that have been faced by ABK. However, without inclusive design, technology has the potential to create new forms of exclusion. To avoid this, the implementation of educational technology must be based on the principle of *Universal Design for Learning (UDL)* which emphasizes the provision of various ways of representation, expression, and involvement in the learning process. This principle allows learners to access the material through a variety of formats, express their understanding in a way that suits their individual abilities, and actively engage in the learning community. Thus, digital learning evaluations not only assess academic achievement, but also ensure equity in access and participation.

In practice, various assistive technologies play an important role in supporting the inclusivity of PAK digital learning evaluations. Screen reader applications such as NVDA and JAWS allow blind learners to access learning materials, evaluation instructions, and digital Bibles through text-to-voice conversion. For deaf learners, the use of subtitles and *speech-to-text* technology ensures that audio information can be received in its entirety in the form of text. Meanwhile, *voice recognition* technology provides an alternative for students with motor limitations to express understanding and reflection on faith without relying on typing skills. In addition, the use of *audio books* and audio descriptions allows for wider access to visual learning materials, so that each student can comprehensively understand the content. The integration of these technologies makes the learning evaluation environment more adaptive and responsive to the diversity of student needs.

Within the framework of Spiritual Learning Analytics (SLA), technological inclusivity is not only related to access to learning materials, but also to fair representation in the process of collecting and analyzing learning data. Evaluation instruments such as spiritual reflection journals and digital portfolios need to be designed flexibly to be accessible and expressed in a variety of formats, including text, audio, and video. This approach ensures that the data analyzed reflects the experiences of all learners without bias against a particular group. Thus, SLA not only serves as a tool to improve the quality of learning, but also as a mechanism to ensure fairness and equality in educational evaluation.

Theologically, inclusive technology integration reflects the values of the Kingdom of God that emphasize acceptance, justice, and empowerment for each

individual. Jesus' example of ministry that embraced marginalized groups provides an ethical basis for the development of inclusive education. In this perspective, the evaluation of digital learning is not simply a technical process, but also a pastoral practice that values diversity and facilitates the spiritual growth of each learner. Technological inclusivity, therefore, plays a role in strengthening the *sense of belonging* in the faith community and encouraging active participation in ecclesiastical and social life.

Nonetheless, the implementation of inclusive technology in digital learning evaluation also faces a number of critical challenges. The limitation of technological infrastructure, the high cost of several assistive devices, and the need to increase educators' digital literacy can be obstacles in its implementation. In addition, ethical issues such as data privacy and security are of important concern, especially when the data collected is related to personal spiritual reflections. The risk of stigmatization also needs to be anticipated so that the use of technology does not cause labeling or discrimination against crew members. Therefore, supportive institutional policies, continuous training for educators, and a commitment to ethical and fair principles in the use of educational technology are needed.

Thus, technological inclusivity for Children with Special Needs is an integral component in the evaluation of PAK's digital learning. The integration of the principles of Universal Design for Learning, the use of assistive technology, and the theological foundation of *Imago Dei* ensures that every student has an equal opportunity to demonstrate his or her academic competence and spiritual growth. This approach not only increases accessibility, but also strengthens participation and a sense of inclusion in faith communities, so that digital learning evaluation becomes a tangible means to realize equitable, humanistic, and transformative education.

Synthesis of Spiritual Learning Analytics Model

Based on the integration of the three main components of authentic assessment, data analytics, and inclusive technology for Children with Special Needs (ABK), a Spiritual Learning Analytics (SLA) *Conceptual Model* can be formulated as a framework for evaluating digital learning in Christian Religious Education (PAK). This model is designed to answer the limitations of traditional evaluations that tend to focus solely on cognitive aspects, by presenting a more holistic, inclusive, and transformative approach.

Structurally, the Spiritual Learning Analytics (SLA) Model was developed as a systemic digital learning evaluation framework, by integrating educational evaluation approaches, learning analytics, and Christian theological perspectives. This model consists of four main elements that interact dynamically with each other, namely input, process, output, and outcome. These four elements form a continuous evaluation cycle that is not only oriented towards improving the quality of learning, but also on the spiritual growth of learners (Stufflebeam 2003; Siemens and Weller 2011).

The input elements include all the initial characteristics of the learner, including social background, level of spiritual development, and special needs possessed by Children with Special Needs (ABK). In the perspective of inclusive

education, this diversity must be understood as the basis for designing fair and responsive evaluations (UNESCO 2009). In addition, the readiness of technology infrastructure such as Learning Management System (LMS), digital devices, internet connectivity, and assistive technology is an important prerequisite for the effective implementation of this model (Rose and Meyer 2014).

The process element represents the core of the implementation of learning evaluation. At this stage, authentic assessments are implemented through contextual tasks such as digital portfolios, spiritual reflection journals, community service projects, and multimedia presentations. These forms of assessment are designed to capture tangible evidence of learners' development of faith and competence holistically (Wiggins 1998).

Furthermore, this process is strengthened through the use of learning analytics principles that allow the systematic collection and analysis of learning data to produce evidence-based feedback (Ifenthaler and Yau 2020). In addition, the Universal Design for Learning (UDL) approach is applied to ensure that all students, including ABK, can participate inclusively in the evaluation process (Rose and Meyer 2014).

The output element refers to the direct results of the evaluation process, which is a holistic picture of student development, including cognitive, affective, social, and spiritual aspects. This approach goes beyond traditional evaluations that tend to focus solely on cognitive aspects, and leads to a more comprehensive understanding of learners' growth (Bloom 1956; Wiggins 1998).

Meanwhile, the outcome element describes the long-term impact of the implementation of the SLA model. These impacts include the growth of faith, the formation of Christian character, and the internalization of gospel values in the daily lives of students. From a theological perspective, education is understood as a process of transformation that respects human dignity and affirms the principle of *Imago Dei*, which is that every individual has intrinsic value before God (Wolterstorff 2004; Fowler 1981).

In addition, this model contributes to the realization of inclusive and equitable education, in line with the principles of global inclusive education that emphasizes full access and participation for all students without discrimination (UNESCO 2009).

Overall, the relationships between the elements in the SLA Model are dynamic and cyclical. The results of the evaluation do not stop at the final level, but become feedback to improve inputs and processes in the next learning cycle. Thus, SLAs serve not only as a digital learning evaluation tool, but also as a reflective framework that supports character formation, inclusivity, and sustainable spiritual growth (Stufflebeam 2003; Siemens and Weller 2011).

In summary, the Spiritual Learning Analytics Model provides a systematic framework for PAK educators to design digital learning evaluations that are not only pedagogically effective, but also spiritually and socially meaningful. The integration between authentic assessment, data analytics, and inclusive technology makes this model a significant conceptual contribution to the development of PAK Educational Technology at the doctoral level.

CONCLUSIONS AND RECOMMENDATIONS

This article develops the Spiritual Learning Analytics (SLA) Model as a conceptual framework for the evaluation of digital learning in Christian Religious Education (PAK) that integrates three main components, namely authentic assessment, data analytics, and inclusive technology for Children with Special Needs (ABK). The integration of these three components results in an evaluation approach that is holistic, inclusive, and transformative, so that it is able to overcome the limitations of traditional evaluations that focus solely on cognitive aspects. Through this model, faith growth, Christian character formation, and students' social involvement can be mapped more comprehensively and sustainably.

Theoretically, this article makes a significant contribution to the development of learning analytics studies by expanding its scope into a spiritual dimension that has not been widely explored in the educational literature. Conceptualization Spiritual Learning Analytics places data as a pedagogical servant interpreted in an ethical and theological framework based on the principle of *Imago Dei*, which affirms the equality of dignity of each individual. Thus, this model not only enriches the discourse of Educational Technology, but also offers an interdisciplinary perspective that integrates pedagogy, technology, and theology.

In practical terms, the SLA model provides systematic guidance for PAK educators in designing evidence-based and inclusive digital learning evaluations. The implementation of authentic assessments allows for the collection of tangible evidence on the integration of faith in daily life, while the use of data analytics supports more informed and personalized pedagogical decision-making. In addition, the integration of assistive technology for ABK ensures accessibility and equal participation in the evaluation process so as to support the realization of fair and inclusive education.

Based on the results of the development of this model, several recommendations can be proposed. First, Christian Education educators are advised to start integrating authentic assessments, such as digital portfolios, reflection journals, and service projects, into a digital learning evaluation system so that assessments not only focus on cognitive aspects, but also reflect the development of students' faith and character. Second, schools and colleges need to develop digital policies and infrastructure that support the ethical implementation of learning analytics, including protecting the privacy of student data and providing accessible technology for Children with Special Needs. Third, Learning Management System (LMS) developers are advised to develop analytics features that not only visualize academic achievement, but are also able to accommodate reflective data and authentic assessments as part of a holistic learning evaluation.

FURTHER STUDY

Future research is recommended to validate the proposed Spiritual Learning Analytics Model through empirical implementation across diverse inclusive educational settings and to examine its effectiveness in improving authentic assessment and learning outcomes in Christian Religious Education for children with special needs (ABK).

ACKNOWLEDGMENT

The authors sincerely thank all individuals and institutions whose support, valuable insights, and constructive contributions made this research possible.

REFERENCES

Barrett, Helen C. Researching Electronic Portfolios and Learner Engagement. 2007.

<https://www.google.com/search?q=Helen+C+Barrett+Researching+Electronic+Portfolios+and+Learner+Engagement>

Boud, David. "Using Journal Writing to Enhance Reflective Practice." New Directions for Adult and Continuing Education. 2001.

<https://www.google.com/search?q=David+Boud+Using+Journal+Writing+to+Enhance+Reflective+Practice>

Dawson, Simon, Dragan Gašević, and George Siemens. "Let's Not Forget: Learning Analytics Are About Learning." Journal of Learning Analytics 2, no. 1 (2015): 6–8.

<https://doi.org/10.18608/jla.2015.21.2>

Fitriyanto, Muhammad Noor, Iqgonul Hakim, and Ade Salahudin Permadi, "Persepsi dan Tantangan Mahasiswa Disabilitas Terhadap Aksesibilitas dan Pengembangan Kompetensi Digital dalam Lingkungan Akademik," Bitnet: Jurnal Pendidikan Teknologi Informasi 11, no. 1 (2026): 1–14, <https://journal.umpr.ac.id/index.php/bitnet/article/view/12029>

Ifenthaler, Dirk, and Jane Y. K. Yau. "Utilising Learning Analytics to Support Study Success in Higher Education: A Systematic Review." Educational Technology Research and Development 68, no. 4 (2020): 1961–1990. <https://doi.org/10.1007/s11423-020-09788-z>

Kia, A. Dan, dan Gilbert Timothy Majesty. Pendidikan Kristen & Teknologi Digital. Bandung: Widina Media Utama, 2026.

<https://repository.penerbitwidina.com/publications/690006/pendidikan-kristen-dan-teknologi-digital>

Mandinach, Ellen B., and Edith S. Gummer. "What Does It Mean for Teachers to Be Data Literate: Laying Out the Skills, Knowledge, and Dispositions." *Teaching and Teacher Education* 60 (2016): 366–376. https://www.researchgate.net/publication/306087171_What_does_it_mean_for_teachers_to_be_data_literate_Laying_out_the_skills_knowledge_and_dispositions

Macfadyen, Leah P., and Shane Dawson. "Mining LMS Data to Develop an 'Early Warning System' for Educators: A Proof of Concept." *Computers & Education* 54, no. 2 (2010): 588–599. <https://doi.org/10.1016/j.compedu.2009.09.008>

Pargament, Kenneth I., and Benjamin J. Zinnbauer. "Religiousness and Spirituality." *Journal of Social Issues* 61, no. 4 (2005).

<https://doi.org/10.1111/j.1540-4560.2005.00435.x>

Verbert, Katrien, Erwin Duval, José G. Broisin, and Marc T. K. De Croon. "Learning Analytics Dashboard Applications." *American Behavioral Scientist* 57, no. 10 (2014): 1500–1509. <https://doi.org/10.1177/0002764213479363>

Slade, Sharon, and Paul Prinsloo. "Learning Analytics: Ethical Issues and Dilemmas." *American Behavioral Scientist* 57, no. 10 (2013): 1510–1529. <https://doi.org/10.1177/0002764213479366>

Siemens, George, and Ryan S. J. d. Baker. "Learning Analytics and Educational Data Mining: Towards Communication and Collaboration." In *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge*. New York: ACM, 2012.

<https://dl.acm.org/doi/10.1145/2330601.2330661>

Suhantoro, Ulil Akilah, Moh. Safi'e, Ikhtiar Rahmatullah, Moh. Akmal Fadlan, dan Qorirotus Shobahiyah. Konektivitas Budaya dengan Jiwa Keagamaan. Malang: Kramantara Jaya Sentosa, 2025.
<https://books.google.co.id/books?hl=id&lr=&id=w-ZIEQAAQBAJ&oi=fnd&pg=PA82&dq=>

A. Buku

Ansori, Ari Hasan, and M. Arie Firdaus Heriansyah. Transformasi Pembelajaran Abad 21: Sinergi Proyek Kontekstual dan Penilaian Autentik Mewujudkan Pembelajaran Mendalam. Bandung: Goresan Pena, 2023.
<https://books.google.co.id/books?hl=id&lr=&id=WnCJEQAAQBAJ&oi=fnd&pg=PA6&dq=>

Fowler, James W. Stages of Faith: The Psychology of Human Development and the Quest for Meaning. San Francisco: Harper & Row, 1981.

<https://www.google.com/search?q=James+W+Fowler+Stages+of+Faith>

Proceedings of the E-Learning and Smart Technologies Conference. Edited by n.n. 2023. Accessed via Google Books.
https://www.google.co.id/books/edition/Proceedings_of_the_E_Learning_and_Smart/vRDNEQAAQBAJ

Saidah, Siti, dan Abdul Muhid. "Transformasi Evaluasi Pembelajaran Berbasis Learning Analytics dalam Pendidikan Islam." Academic Review of Journal and Innovation 3, no. 2 (2025): 31-45.
<https://doi.org/10.61227/arji.v7i4.608>

Groome, Thomas H. Christian Religious Education: Sharing Our Story and Vision. New York: HarperOne, 1980.
<https://books.google.co.id/books?id=l4pzjSGfiXgC&printsec=copyright&hl=id#v=onepage&q&f=false>

UNESCO. Inclusive Education: The Way of the Future. Paris: UNESCO, 2009.

<https://unesdoc.unesco.org/>

Westerhoff III, John H. Will Our Children Have Faith? New York: Seabury Press, 1976.

<https://www.google.com/search?q=John+H+Westerhoff+Will+Our+Children+Have+Faith>

Wilson, Anna, et al. "Learning Analytics: Challenges and Limitations." *Teaching in Higher Education* 22, no. 8 (2017): 991–1007. 10.1080/13562517.2017.1332026

Wiggins, Grant. *Educative Assessment: Designing Assessments to Inform and Improve Student Performance*. San Francisco: Jossey-Bass, 1998. <https://share.google/6xFmZyo5TBmVHyRNJ>

Wolterstorff, Nicholas. *Educating for Shalom: Essays on Christian Higher Education*. Grand Rapids: William B. Eerdmans Publishing Company, 2004. <https://www.google.com/search?q=>