

**How Organizations Evaluate Training
Transfer—and the Technologies
They Use to Do It**
*A Mixed-Methods Study of Evaluation Practices
and Enabling Technologies*

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Organizations invest substantial resources in training, yet determining whether learning transfers to workplace performance remains challenging. Although transfer and evaluation models provide frameworks for examining training outcomes, less is known about how organizations operationalize transfer evaluation and the technologies they use to support it. This sequential explanatory mixed-methods study examined how organizations evaluate training transfer and the technologies they use to collect, store, and analyze transfer-related information. Survey data were collected from 135 respondents, followed by semi-structured interviews with nine participants. Quantitative findings showed that organizations evaluated transfer at different points in time and used multiple evaluation models and analytics levels. Technologies and methods also varied by evaluation level: learning management systems were most frequently reported for collecting Level 2 information, direct observation for Level 3, and business metrics for Level 4. Qualitative findings also identified multiple approaches to workplace performance evidence, including learning management, human resource, customer relationship management, survey, spreadsheet, collaboration, and other systems and methods. Taken together, the findings show that transfer evaluation involves multiple forms of evidence obtained through multiple workplace processes and organizational sources. Evaluating transfer therefore requires attention not only to what organizations intend to evaluate, but also to the evidence needed to determine whether transfer occurred, where that evidence resides, and the methods or technologies needed to obtain and use it.

Keywords: transfer of training, training evaluation, learning management systems, Kirkpatrick model

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INTRODUCTION

Organizations invest substantial resources in employee training, expecting learning to improve workplace performance. However, learning during training does not necessarily mean that employees will apply and maintain newly acquired knowledge and skills on the job. Training transfer requires generalizing learning to the work environment and maintaining it over time (Baldwin & Ford, 1988). Subsequent research has reinforced the distinction between learning and transfer, indicating that learning outcomes alone do not establish that workplace performance has changed (Blume et al., 2010; Blume et al., 2019).

Determining whether performance changed requires organizations to evaluate what happens after training. Established evaluation approaches provide frameworks for examining learning, workplace behavior, organizational results, and other outcomes (Kirkpatrick, 1959a, 1959b, 1960a, 1960b; Phillips, 1996). However, research on evaluation practice indicates that workplace behavior and organizational results are evaluated less frequently than learner reactions and learning outcomes (Association for Talent Development Research, 2019; Kennedy et al., 2014).

Evaluating transfer requires different evidence than evaluating learning. Evidence of learning concerns what participants know or can demonstrate as a result of training, whereas evaluating transfer requires evidence that learned capabilities are subsequently applied in workplace performance (Baldwin & Ford, 1988; Kirkpatrick, 1959a, 1959b, 1960a, 1960b). Evaluating organizational results requires evidence about relevant organizational outcomes (Kirkpatrick, 1959a, 1959b, 1960a, 1960b). The challenge, therefore, is not simply deciding what to evaluate. Organizations must also determine what evidence is needed and how to obtain it.

Technology provides mechanisms for collecting, storing, and analyzing training evaluation data. Prior research has examined learning management systems and analytics as technologies that can support these functions (Gandomi & Haider, 2015; Ilyas et al., 2017; Song et al., 2019). Examining how organizations evaluate transfer therefore also requires attention to the technologies they use to support the evaluation process.

Although substantial research has examined training transfer, training evaluation, and technologies that can support evaluation, less is known about how organizations bring these elements together in practice to evaluate transfer and the technologies they use to collect, store, and analyze transfer-related data.

Accordingly, this study examined how organizations evaluate the transfer of training and the technologies they use to collect, store, and analyze transfer-related data. The following research questions guided the study:

RQ1: How do organizations evaluate the transfer of training?

RQ2: What technologies do organizations use to collect, store, and analyze training transfer data?

By examining evaluation practices and supporting technologies together, this study provides an empirical account of how organizations evaluate training transfer and how technology supports the collection, storage, and analysis of transfer-related data.

LITERATURE REVIEW

Evaluating training transfer requires consideration of both the nature of transfer and the evidence organizations use to determine whether transfer has occurred. The literature reviewed in this section addresses

three related areas: the conceptual foundations of training transfer, approaches used to evaluate transfer and related training outcomes, and the methods and technologies that support the collection and analysis of evaluation data. Together, these areas provide the foundation for examining how organizations evaluate training transfer in practice and the technologies they use to support that evaluation.

Transfer of Training

Transfer of training has generally been distinguished from the learning that occurs during a training program because transfer requires the subsequent application of acquired knowledge, skills, and attitudes to workplace performance (Baldwin & Ford, 1988; Blume et al., 2010; Burke & Hutchins, 2007; Ford & Weissbein, 1997; Holton et al., 1997). Transfer therefore extends beyond what employees know or can demonstrate at the conclusion of training to whether they use what they learned when they return to work (Baldwin & Ford, 1988; Blume et al., 2010; Broad & Newstrom, 1992). The transfer literature has also treated time as an important component of the construct because workplace application must be sustained rather than demonstrated only once following training (Baldwin & Ford, 1988; Blume et al., 2019; Ford & Weissbein, 1997).

Baldwin and Ford's (1988) Transfer of Training Model provided a foundational framework for explaining this distinction by separating training inputs, training outputs, and conditions of transfer. Training inputs included trainee characteristics, training design, and the work environment, while training outputs included learning and retention resulting from training (Baldwin & Ford, 1988). The conditions of transfer were then represented through generalization, or the application of learned knowledge and skills to the job context, and maintenance, or the continued use of that learning over time in the workplace (Baldwin & Ford, 1988; Blume et al., 2010). This distinction separates learning acquisition and retention from the subsequent workplace performance through which transfer is demonstrated (Baldwin & Ford, 1988; Blume et al., 2010).

The Baldwin and Ford (1988) framework also positioned transfer as dependent on more than the learning that occurs during instruction because trainee characteristics, training design, and work-environment conditions can influence whether learning is subsequently generalized and maintained. Subsequent research continued to identify learner, training, and work-environment characteristics as important to transfer, including opportunities to perform and organizational support for applying newly acquired capabilities (Burke & Hutchins, 2007; Grossman & Salas, 2011; Holton et al., 1997). The work environment is particularly relevant because employees need opportunities to use newly acquired capabilities after training, along with conditions that support their continued application (Baldwin & Ford, 1988; Grossman & Salas, 2011; Holton et al., 1997). Thus, transfer reflects an interaction between what was learned and the conditions under which that learning is subsequently applied in the workplace (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Grossman & Salas, 2011).

The temporal nature of transfer further complicates the distinction between learning and workplace application. Baldwin and Ford (1988) treated maintenance as the continued use of learned capabilities over time, while subsequent research examined how the extent of transfer can change as time passes after training (Blume et al., 2019; Saks & Belcourt, 2006). Evidence of application shortly after training therefore represents transfer at a particular point in time but does not, by itself, establish that the

behavior will continue to be maintained (Baldwin & Ford, 1988; Blume et al., 2019).

Blume et al. (2019) extended this temporal perspective through the Dynamic Transfer Model, which conceptualizes transfer as an iterative rather than a single post-training event. The model incorporates multiple opportunities for employees to attempt to use learned knowledge and skills after returning to work, with those transfer attempts occurring repeatedly over time (Blume et al., 2019). Across these opportunities, employees may apply, maintain, modify, or discontinue learned capabilities as they interact with the demands and conditions of their work environments (Blume et al., 2019). This dynamic perspective extends Baldwin and Ford's (1988) generalization and maintenance conditions by recognizing that transfer can develop differently across repeated opportunities for workplace application (Baldwin & Ford, 1988; Blume et al., 2019).

The transfer literature therefore distinguishes transfer from learning by locating transfer in the subsequent application and maintenance of learned capabilities in workplace performance (Baldwin & Ford, 1988; Blume et al., 2010; Blume et al., 2019; Ford & Weissbein, 1997). Workplace conditions, including opportunities to perform, can influence whether those capabilities are used and sustained (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Grossman & Salas, 2011; Holton et al., 1997). Transfer is also temporal and dynamic because workplace application can develop, change, and be maintained differently across repeated opportunities to use what was learned (Baldwin & Ford, 1988; Blume et al., 2019).

Evaluation of Training Transfer

Training transfer concerns whether learning is subsequently applied and maintained in workplace performance, whereas training evaluation involves collecting evidence about the effects of training and assessing their significance (Baldwin & Ford, 1988; Hamblin, 1974). Training evaluation has also been described as a systematic process for determining training effectiveness, assessing learning outcomes, and determining the value training contributes to an organization (Brown & Gerhardt, 2002; Kraiger et al., 1993; Phillips & Phillips, 2016). Evaluating transfer therefore focuses the broader evaluation process on evidence of what happens after employees return to work.

Kirkpatrick's four-level framework provided an early structure for distinguishing among different training outcomes. The original four-part series addressed learner reaction, learning, changes in workplace behavior, and organizational results (Kirkpatrick, 1959a, 1959b, 1960a, 1960b). Within this framework, Level 2 concerns what participants learned, while Level 3 shifts the focus from learning during training to subsequent workplace behavior. Level 4 extends the evaluation to organizational results associated with changes in performance. These distinctions matter for transfer evaluation because evidence that employees learned something during training differs from evidence that they later applied what they learned at work.

Level 3 evaluation and training transfer are therefore closely related but should not be treated as synonymous. Transfer refers to the application and maintenance of learning in the workplace (Baldwin & Ford, 1988). In contrast, Level 3 provides an evaluation framework for examining whether training is reflected in changed workplace behavior (Kirkpatrick, 1959a, 1959b, 1960a, 1960b). This distinction becomes particularly important when considering maintenance. Evidence that an employee demonstrates a behavior at one point after training may indicate workplace application,

but transfer also concerns whether that application is sustained over time (Baldwin & Ford, 1988; Blume et al., 2019). Consequently, the timing and recurrence of workplace evidence matter for what can be concluded about transfer.

The four levels identify distinct categories of training outcomes, but the framework has been criticized when those levels are interpreted as a causal sequence. Reio et al. (2017) reviewed conceptual and empirical concerns with assumptions that favorable outcomes at one level necessarily produce favorable outcomes at subsequent levels. Evidence that participants reacted positively to training does not, by itself, demonstrate that they learned, just as evidence of learning does not establish that workplace behavior subsequently changed. For transfer evaluation, the implication is particularly important: evidence collected at the learning level cannot substitute for evidence of subsequent workplace application.

Other evaluation approaches have extended the outcomes examined beyond workplace behavior. Phillips (1996), for example, extended evaluation to return on investment by comparing the monetary benefits associated with program results with program costs. Phillips and Phillips (2016) subsequently positioned organizational value as an important consideration in determining training effectiveness. Although transfer and organizational results represent different outcomes, examining results extends the evaluation question beyond whether employees changed their workplace behavior to whether those changes were associated with outcomes of importance to the organization (Phillips, 1996; Phillips & Phillips, 2016).

Research conducted by the American Society for Training and Development (ASTD), later the Association for Talent Development (ATD), reported differences between the perceived value and use of Level 3 evaluation. In 2009, 75% of respondents considered Level 3 evaluation valuable, while 55% reported using it (American Society for Training and Development Research, 2009). In 2016, 73% considered Level 3 valuable and 60% reported using it, while in 2019, 79% considered Level 3 valuable and 54% reported using it (Association for Talent Development Research, 2016, 2019). Although these studies involved different samples and should not be interpreted as demonstrating a longitudinal trend, in each study the percentage of respondents who considered Level 3 evaluation valuable was higher than the percentage who reported using it. Research on evaluation practice has similarly identified methodological and organizational challenges associated with examining workplace behavior and organizational results (Kennedy et al., 2014; Moller & Mallin, 1996; Twitchell et al., 2000).

Evidence and Technology in Transfer Evaluation

The evidence used in training evaluation depends on the outcome being examined. Established evaluation approaches distinguish among learning, workplace behavior, and organizational results, each of which directs attention to different training outcomes (Kirkpatrick, 1959a, 1959b, 1960a, 1960b). Organizations have used methods such as pre- and post-training assessments, surveys and questionnaires, and focus groups to collect evaluation data (Association for Talent Development Research, 2019). Instruments such as the Learning Transfer System Inventory have also been developed to examine factors that can affect the transfer of training to workplace performance (Holton et al., 1997, 2000).

The literature identifies several technologies that can support training evaluation, including learning management systems and analytics (Bakar & Jalil, 2017; Gandomi & Haider, 2015; Ilyas et al., 2017; Mattox et al., 2020; Papamitsiou & Economides, 2014; Song et al., 2019).

Learning management systems provide several functions relevant to training evaluation. Ilyas et al. (2017) identified LMS capabilities that include collecting training-related data, administering pre- and post-training assessments, tracking learner progress and completion, and storing and analyzing training data. Bakar and Jalil (2017) similarly described LMSs as systems that structure and provide access to learning information and support functions such as enrollment and certification. Together, these capabilities allow LMSs to support both the management of learning activities and the collection and management of data associated with those activities (Bakar & Jalil, 2017; Ilyas et al., 2017).

Analytics provide methods for deriving meaning from data to support data-based decisions (Gandomi & Haider, 2015). Song et al. (2019) identified four forms of analytics: descriptive analytics summarize existing data, diagnostic analytics examine causes of identified problems, predictive analytics use data and statistical methods to anticipate outcomes, and prescriptive analytics use data to inform potential actions. Learning analytics more specifically involves collecting, analyzing, and reporting learner-related data to understand better learning and the environments in which it occurs (Mattox et al., 2020; Papamitsiou & Economides, 2014).

Taken together, the literature establishes that training transfer is distinct from learning, occurs through the application and maintenance of learned capabilities in workplace performance, and must therefore be evaluated using evidence of what happens after training. Established evaluation approaches provide frameworks for examining workplace behavior and organizational results, while evaluation methods and technologies provide mechanisms for collecting, managing, and analyzing relevant data. Less is known, however, about how organizations bring these elements together in practice to evaluate training transfer and support that evaluation with technology.

METHODOLOGY

Research Design

This study used a sequential explanatory mixed-methods design in which quantitative data collection and analysis were followed by qualitative data collection and analysis (Creswell & Creswell, 2018). This article reports findings addressing two questions from the larger mixed-methods study: how organizations evaluated training transfer and the technologies they used to collect, store, and analyze transfer-related data. The quantitative phase was conducted first, and its findings informed the subsequent qualitative inquiry.

The mixed-methods design used complementarity and development to connect the two phases. Complementarity uses one method to elaborate, enhance, or clarify findings from another, while development uses findings from one method to inform the subsequent method (Onwuegbuzie & Leech, 2006). In this study, quantitative findings informed the qualitative phase, which provided an opportunity to examine further and explain participants' reported evaluation practices and use of technology. The quantitative and qualitative findings were subsequently integrated to develop a more complete understanding of how organizations evaluated training transfer and used technology to support that evaluation.

Participants and Sampling

The quantitative phase used a web-based survey distributed through the LinkedIn accounts of the Association for Talent Development (ATD), International Society for Performance Improvement (ISPI), and Training Magazine. The final quantitative sample consisted of 135 respondents. Respondents represented organizations of varying sizes, geographic locations, and industries and held positions ranging from individual contributor to executive.

The qualitative phase used criterion-purposive sampling to select survey respondents who could provide additional insight into the quantitative findings. Selection considered whether respondents reported that their organizations evaluated training transfer, used technology to collect and analyze transfer-evaluation data, represented one of three organizational-size categories, and were willing to participate in a follow-up interview. Criterion-purposive sampling identified participants with experience relevant to the phenomenon under investigation (Ary et al., 2019; Creswell & Creswell, 2018).

Thirty survey respondents volunteered for follow-up interviews. After applying the selection criteria and excluding consultants and educators, 18 respondents were invited to participate, and nine ultimately completed interviews. The final qualitative sample included three participants from small organizations (fewer than 500 employees), three from medium-sized organizations (501–9,999 employees), and three from large organizations (10,000 or more employees). Participants' organizational roles ranged from individual contributor to executive. Eight participants represented U.S.-based organizations and one represented a European organization.

Quantitative Instrument and Data Collection

Quantitative data were collected using a web-based survey developed to examine organizational practices related to training evaluation, transfer evaluation, and the technologies used to support evaluation. The instrument incorporated 17 questions adapted from ATD evaluation surveys conducted in 2009, 2016, 2019, and 2023 (American Society for Training and Development Research, 2009; Association for Talent Development Research, 2016, 2019, 2023). Additional questions were developed to address areas of the study not represented in the ATD instruments. The final survey included 21 substantive questions: six five-point matrix/Likert-scale questions, 14 select-all-that-apply questions, and one open-response question. The survey also included seven demographic questions and one question asking whether respondents were willing to participate in a follow-up interview.

Before data collection, a pilot study was conducted to review the survey and provide evidence of its face and construct validity. Thirty academic and organizational professionals familiar with training transfer, organizational training, and evaluation were invited to participate, and 22 completed the pilot study. Participants reviewed the survey questions and response options and provided feedback on the instrument. Based on their feedback, several questions were revised for clarity, response options were updated to reflect changes in technology, and three questions concerning learning objectives were added and subsequently reviewed.

Reliability was also examined as part of the pilot study. Cronbach's alpha coefficients for the 21 substantive survey questions ranged from .708 to .983. These results provided evidence of instrument reliability.

The final survey was administered electronically using SurveyMonkey and remained open for four weeks. The invitation was distributed through the LinkedIn accounts of ATD, ISPI, and Training Magazine. Because

respondents could encounter the invitation through more than one source, Internet Protocol (IP) addresses were reviewed to identify duplicate responses; no duplicate responses were identified.

Qualitative Instrument and Data Collection

The qualitative interview protocol was developed after analyzing the quantitative survey data, consistent with the sequential explanatory mixed-methods design. Quantitative findings were used to identify areas for further exploration during the qualitative phase. Before each interview, the participant's survey responses were reviewed to identify responses that could be explored or clarified during the interview. A semi-structured interview protocol provided a common set of questions while allowing follow-up questions based on participants' responses.

Nine semi-structured interviews were conducted using Zoom. Interviews lasted approximately 45 to 60 minutes, were recorded, and were professionally transcribed. The semi-structured format allowed the researcher to ask follow-up questions when additional explanation or clarification was needed. The researcher maintained field notes throughout the qualitative phase to document observations and thoughts relevant to the interviews.

Following transcription, each participant received a copy of the interview transcript and was asked to review it for accuracy and make any needed edits. Participants then approved their transcripts before the data were used in the qualitative analysis. This process provided participants an opportunity to verify that the transcripts accurately represented their interview responses.

Data Analysis

Quantitative Data Analysis

Quantitative survey data were analyzed using SPSS. Descriptive statistical analyses included frequency distributions, measures of central tendency, and measures of variability or dispersion (Ary et al., 2019). For the two research questions reported in this article, frequencies and percentages were used to examine how organizations evaluated training transfer and the technologies they used to collect, store, and analyze transfer-related data. For select-all-that-apply questions, each response option was analyzed independently; therefore, percentages were not mutually exclusive and could exceed 100%.

Qualitative Data Analysis

Qualitative interview data were analyzed using NVivo and Braun and Clarke's (2006) six-phase thematic analysis process. An inductive, semantic approach was used, allowing themes to develop from the data while focusing on the content expressed in participants' responses (Ary et al., 2019; Braun & Clarke, 2006). The researcher first became familiar with the data by repeatedly reading the interview transcripts. Participants' words and phrases were then used to develop initial in-vivo codes, which were grouped into broader categories and subsequently developed into themes. Themes were reviewed, refined, defined, and named through repeated examination of the transcripts, codes, categories, and field notes.

Mixed-Methods Integration

Data mixing occurred sequentially across the quantitative and qualitative phases, with quantitative findings informing development of the subsequent qualitative inquiry (Onwuegbuzie & Leech, 2006). Quantitative and qualitative data were first analyzed within their respective phases. Following those analyses, the two datasets were reviewed together to identify findings that addressed similar aspects of the research

questions. The qualitative findings were then used to explain further, expand, and provide context for the quantitative findings.

The mixing process included four stages: data reduction, data correlation, data consolidation, and data integration (Onwuegbuzie & Teddlie, 2003). Data reduction involved the statistical analysis of quantitative data and summarization of qualitative data; data correlation involved examining the quantitative and qualitative findings in relation to one another; data consolidation involved combining related findings from the two datasets; and data integration involved bringing the combined evidence together to address the research questions.

Methodological Rigor

Several procedures supported the credibility and consistency of the qualitative analysis. The team developed written coding guidelines and a codebook to provide common rules, definitions, examples, and non-examples for coding. Two independent inter-raters—a recent PhD graduate and a current PhD student—each independently coded two participant interviews using the study's in-vivo coding approach. Their coding was compared with the researcher's coding. One discrepancy was identified across the four independently coded interviews; it was reviewed and incorporated into the analysis. These procedures provided an additional check on the consistency of the coding process (Ary et al., 2019).

Additional procedures included method triangulation across the quantitative survey and qualitative interviews, peer review of the collected data and interpretations, participant review and approval of interview transcripts, and researcher reflection (Ary et al., 2019; Patton, 1999). The researcher maintained a reflective journal throughout the study and revisited those reflections during data analysis. The researcher maintained an audit trail through interview transcripts, contact and interview records, coding documentation, and other records of the research process.

Ethical Review

The university's Institutional Review Board approved the study before data collection began. Interview participants provided informed consent before their interviews were scheduled.

FINDINGS

The findings are organized by research question. For each research question, quantitative and qualitative findings are presented separately, followed by an integration of the two strands.

RQ1: How Do Organizations Evaluate the Transfer of Training?

Quantitative Findings

Three survey questions addressed how organizations evaluated the transfer of training: when organizations conducted Level 3 evaluations, which evaluation levels used analytics, and which evaluation models they used. Because all three questions allowed respondents to select more than one response, percentages were not mutually exclusive.

Among the 102 respondents who answered the question about the timing of Level 3 evaluation, 53 (52%) reported conducting evaluations between two weeks and two months after training, and 44 (43%) reported conducting evaluations more than two months after training. Thirty-six respondents (35%) reported evaluating within the first two weeks after training, while 26 (25%) reported taking measurements prior to training. Fourteen respondents (14%) indicated that their organizations did not conduct Level 3 evaluations, and seven (7%) did not know when Level 3 evaluation occurred.

Reported use of analytics varied by evaluation level. Among the 91 respondents who answered this question, 66 (73%) reported using analytics at Level 1 and the same number reported using analytics at Level 2. Fifty-six respondents (62%) reported using analytics at Level 3, compared with 43 (47%) at Level 4 and 15 (16%) at Level 5. Four respondents (4%) did not know whether their organizations used analytics to evaluate training.

Respondents also reported using multiple evaluation models. Of the 99 respondents who answered this question, 71 (72%) identified the Kirkpatrick Four-Level Evaluation Model, 23 (23%) identified the Phillips ROI model, 14 (14%) identified the Learning-Transfer Evaluation Model (LTEM), and eight (8%) identified the Brinkerhoff Success Case Method. Fifteen respondents (15%) identified another evaluation model, and 14 (14%) were unsure which model their organization used.

Qualitative Findings

The qualitative analysis identified one overarching theme describing how organizations evaluated training transfer: employ human-based and automated performance data capture. Five categories supported this theme: performance tracking systems, skill-based evaluations, scheduled performance reviews, learner self-assessments, and multi-source feedback.

Performance tracking systems. Participants described using performance information and organizational processes to examine employee performance following training. One participant described supervisors and operator trainers meeting with trainees biweekly to discuss the training and review feedback. The same participant described evaluating information based on employees' overall performance metrics. Another participant described using customer net promoter survey data in connection with areas addressed through training.

Skill-based evaluations. Participants also described evaluating whether employees could demonstrate skills associated with training. The qualitative data included practical assessments and other approaches to examining performance. Some evidence originally coded within this category concerned knowledge checks conducted during training rather than subsequent workplace application. Because the present research question concerns transfer, this analysis did not treat those learning-level examples as evidence of workplace transfer.

Scheduled performance reviews. Participants described follow-up occurring at different intervals after training. One participant described evaluation as continuing until an employee was considered capable of performing independently. Others described follow-up at six months or observations and check-ins occurring three to six months after training and, in some circumstances, again at 12 months.

Learner self-assessments. Participants reported asking learners to assess or report changes in their own workplace behavior. One participant characterized this as an indirect way of measuring transfer by asking learners about their behavior change on the job. Other evidence coded within this category concerned end-of-course assessments and knowledge checks; as with the skill-based category, those learning-level measures were distinguished from evidence of subsequent workplace application.

Multi-source feedback. Participants described obtaining information about employee performance from sources beyond the learner. The qualitative analysis identified multi-source feedback as a distinct category within the broader performance-data-capture theme, adding another source of evidence organizations used when examining transfer.

Integrated Findings

Considered together, the quantitative and qualitative findings showed that organizations used multiple approaches to evaluate training transfer. Quantitatively, organizations varied in when they conducted Level 3 evaluations, the evaluation levels at which they used analytics, and the formal evaluation models they employed. The qualitative findings expanded these results by identifying workplace practices used to obtain transfer-related evidence, including performance tracking, skill-based evaluation, scheduled follow-up, learner self-assessment, and feedback from multiple sources.

Together, the findings indicate that transfer evaluation was operationalized through combinations of formal evaluation approaches and workplace evidence rather than through a single method.

RQ2: What Technologies Do Organizations Use to Collect, Store, and Analyze Training Transfer Data?***Quantitative Findings***

Four survey questions addressed the technologies and methods organizations used to collect or capture, store or manage, and analyze training evaluation data. 100 respondents answered the collection and storage questions, while 89 answered the analysis question. Because respondents could select more than one response, the percentages were not mutually exclusive.

Collection and capture. Respondents reported using different technologies and methods to collect evaluation data at Levels 2, 3, and 4. For Level 2 evaluation, learning management systems were the most frequently reported option, identified by 77 respondents (78%). Direct observation was reported by 40 respondents (40%), followed by paper tracking by 31 (31%) and surveys by 28 (28%). Other reported approaches included non-LMS systems, in-person interviews, spreadsheets, performance reviews, business metrics, and HR platforms.

For Level 3 evaluation, direct observation was the most frequently reported approach, identified by 63 respondents (64%). In-person interviews were reported by 52 respondents (53%), surveys by 47 (47%), and performance reviews by 46 (46%). Respondents also reported paper tracking (40%), business metrics (35%), non-LMS systems (31%), LMSs (26%), spreadsheets (25%), and HR platforms (18%).

For Level 4 evaluation, business metrics were the most frequently reported approach, identified by 60 respondents (61%). In-person interviews were reported by 31 respondents (31%), while non-LMS systems and surveys were each reported by approximately one-quarter of respondents. Other approaches included spreadsheets, performance reviews, HR platforms, direct observation, paper tracking, and LMSs. Eight respondents (9%) reported using an LMS for Level 4 collection.

Respondents could also identify technologies and methods not included among the predefined response options. These included observation of employees or their completed work, informal conversations with leadership, 360-degree surveys, sales and trend data, scenario- or job-based assessments, and paper or automated observation checklists.

Storage and management. Learning management systems were the most frequently reported technology for storing or managing evaluation data. Of the 100 respondents who answered this question, 74 (74%) reported using an LMS and 51 (51%) reported using spreadsheets. Thirty respondents (30%) reported using a non-LMS system, 24 (24%) an HR platform, and 22 (22%) paper tracking. Eighteen respondents (18%)

identified other technologies, and seven (7%) reported that their organizations did not store evaluation data.

The open-response data identified additional technologies used for storage or management, including Google Forms, SharePoint, Microsoft Teams, Qualtrics, Power BI, Tableau, Learning Record Stores, data warehouses, internally developed dashboards, cloud-based survey applications, and other business or internally developed systems.

Analysis. The survey also asked respondents to identify what their organizations used to analyze on-the-job behavior change. Because several response options represented methods or evidence sources rather than technologies, they are reported here as analysis approaches. Of the 89 respondents who answered the question, 61 (69%) reported using learner surveys, and 54 (61%) reported using performance metrics. Focus groups and performance documentation were each reported by 44 respondents (44%). Eleven respondents (12%) selected other approaches.

The open responses expanded the range of analysis approaches to include 360-degree surveys, an HR module used for reviews and action-plan monitoring, sales and trend data, scenario- or job-based assessments, and paper or automated observation checklists.

Qualitative Findings

The qualitative analysis identified one overarching theme describing technology use: integrated training evaluation systems and technologies. Four categories supported this theme: learning management systems, human resource information systems, customer relationship management systems, and manual data collection and reporting.

Learning management systems. Six of the nine interview participants reported using an LMS. Participants described both established and newer systems, including Brainier and Workday LMS.

Human resource information systems. Participants also described using human resource information systems to store and manage organizational and performance information. Multiple participants identified Workday, including one who specifically described information being stored in the organization's HRIS.

Customer relationship management systems. Participants described CRM and related systems as additional sources or locations for evaluation-related data. One participant reported using Salesforce and Qualtrics. Another described the organization's learning system and Salesforce as "not easily connected."

Manual data collection and reporting. Participants also described using online surveys, spreadsheets, collaboration platforms, and forms to collect and report evaluation information. Examples included SurveyMonkey, Excel spreadsheets used through Microsoft Teams, Microsoft Forms, and other applications within the Microsoft 365 environment.

Integrated Findings

Considered together, the quantitative and qualitative findings showed that organizations used multiple technologies, systems, and methods to support training evaluation. The most frequently reported approach for collecting evaluation data varied by evaluation level. LMSs were most frequently reported for Level 2 collection, direct observation for Level 3, and business metrics for Level 4.

The qualitative findings expanded the quantitative results by showing how evaluation information was handled across learning systems, HR systems, CRM systems, survey platforms, spreadsheets, collaboration tools, and other organizational technologies.

Table 1
Integration of Quantitative and Qualitative Findings

Integrated area	Quantitative evidence	Qualitative evidence	Integrated finding
Evaluation timing and follow-up	Respondents reported pretraining measurement and Level 3 evaluation within two weeks, between two weeks and two months, and more than two months after training.	Participants described biweekly follow-up, six-month evaluation, observations and check-ins three to six months after training, and, in some cases, additional follow-up at 12 months.	Organizations reported establishing pretraining measures and evaluating Level 3 outcomes at different intervals following training; interview participants also described repeated follow-up over time.
Workplace performance evidence	Analytics were reported at Level 3, and direct observation was the most frequently reported Level 3 collection approach.	Participants described performance metrics, skill-based evaluation, scheduled review, learner self-assessment, and multi-source feedback.	Organizations used multiple sources and methods to obtain evidence of workplace performance following training.
Technologies and systems	LMSs were most frequently reported for Level 2 collection, direct observation for Level 3, and business metrics for Level 4. LMSs and spreadsheets were the most frequently reported technologies for storing or managing evaluation data.	Participants described LMSs, HRISs, CRM systems, survey platforms, spreadsheets, collaboration tools, and other applications.	Different technologies and methods were reported across evaluation activities and across the collection and management of evaluation information.

Integrated area	Quantitative evidence	Qualitative evidence	Integrated finding
Evaluation information across organizational systems	Respondents reported using LMSs, non-LMS systems, HR platforms, spreadsheets, business metrics, and other technologies and methods.	Participants described evaluation information in learning, HR, CRM, survey, and other organizational systems. One participant specifically reported that the learning system and Salesforce were not easily connected.	Evaluation information was collected and managed through multiple organizational systems and methods; one participant also identified difficulty connecting two systems used by the organization.

DISCUSSION

Prior research has established that learning and transfer are distinct outcomes and that evaluating workplace behavior requires evidence beyond what employees learned during training (Baldwin & Ford, 1988; Blume et al., 2010). Evaluation frameworks similarly distinguish learning, workplace behavior, and organizational results as different evaluation outcomes (Kirkpatrick, 1959a, 1959b, 1960a, 1960b; Phillips, 1996).

The present study extends this literature by examining how organizations operationalize those distinctions when evaluating transfer. The findings suggest that conducting transfer evaluation involves more than selecting an evaluation model or identifying an outcome to measure. Organizations must also obtain evidence appropriate to that outcome. As evaluation moves from learning to workplace behavior and organizational results, the evidence and methods used to conduct the evaluation change.

Evaluating Transfer Requires Evidence of Workplace Performance

Baldwin and Ford (1988) conceptualized transfer through the generalization and maintenance of learned knowledge and skills in the work environment. Subsequent research has continued to distinguish learning acquired during training from its application in workplace performance (Blume et al., 2010). Transfer also has a temporal dimension because application occurs through opportunities to use learning after employees return to work and may be maintained, modified, or discontinued over time (Blume et al., 2019).

The findings reinforce the importance of both workplace evidence and time when evaluating transfer. Organizations reported establishing pretraining measures and conducting Level 3 evaluations at different intervals following training. Interview participants described follow-up ranging from biweekly reviews to six-month evaluations and, in some circumstances, observations and check-ins extending to 12 months. They also described performance metrics, skill-based evaluations, scheduled performance reviews, learner self-assessments, and feedback from multiple sources as ways of obtaining evidence about workplace performance.

These findings extend the transfer literature by showing how the conceptual distinction between learning and transfer is reflected in organizational evaluation practice. The literature establishes that evidence

of learning does not establish that transfer occurred (Baldwin & Ford, 1988; Blume et al., 2010). Organizations attempting to evaluate transfer in the present study drew on evidence generated after employees returned to work and through multiple sources and processes. Transfer evaluation therefore requires evidence not simply of what employees learned, but of what subsequently occurred in workplace performance.

This interpretation is also consistent with the distinction between Level 2 and Level 3 evaluation. Kirkpatrick's original framework separates learning from subsequent changes in workplace behavior (Kirkpatrick, 1959a, 1959b, 1960a, 1960b). Level 3 and transfer are not synonymous, however. Transfer includes both the generalization and maintenance of learning, making the timing and recurrence of workplace evidence relevant to conclusions about whether transfer has occurred (Baldwin & Ford, 1988; Blume et al., 2019). The present findings add an organizational-practice perspective to this distinction by showing that participants described both different evaluation intervals and repeated follow-up following training.

Different Outcomes Require Different Evidence and Methods

The findings also provide an empirical connection between the outcome being evaluated and the evidence and methods used to evaluate it. The most frequently reported approach for collecting evaluation data differed across Levels 2, 3, and 4. LMSs were most frequently reported for Level 2, direct observation for Level 3, and business metrics for Level 4. Organizations also reported surveys, interviews, performance reviews, spreadsheets, HR platforms, non-LMS systems, and other methods and technologies.

This pattern is consistent with the distinctions embedded within established evaluation frameworks. Level 2 concerns what participants learned, Level 3 concerns subsequent workplace behavior, and Level 4 concerns organizational results (Kirkpatrick, 1959a, 1959b, 1960a, 1960b). Phillips (1996) extends the progression to the financial value associated with organizational results. The evaluation outcome therefore changes across these levels, and so does the evidence necessary to examine it.

The present study adds to this literature by demonstrating how those differences appear in organizational evaluation practice. The findings do not establish that particular technologies determine which evaluation levels organizations conduct. Rather, they suggest that the outcome being examined and the evidence needed to examine it are connected to the methods and technologies used to conduct the evaluation. This distinction aligns with Kirkpatrick's separation of learning, workplace behavior, and organizational results (Kirkpatrick, 1959a, 1959b, 1960a, 1960b). Learning can be examined through evidence generated within the learning process, whereas evaluating behavior requires evidence of subsequent workplace performance, and evaluating results requires evidence associated with the organizational outcome being examined.

Prior literature identifies several technologies that can support training evaluation. LMSs can support the collection and management of training-related information and assessments (Bakar & Jalil, 2017; Ilyas et al., 2017), while analytics provide capabilities to examine data and support data-based decisions (Gandomi & Haider, 2015; Song et al., 2019). Learning analytics more specifically focuses on collecting, analyzing, and reporting learner-related data (Mattox et al., 2020; Papamitsiou & Economides, 2014).

The present findings therefore suggest that the evaluation question should precede the technology question. The issue is not simply which technology is available, but what evidence is required to answer the evaluation question and which methods, processes, or systems can provide that evidence.

Transfer Evaluation Extends Beyond the Learning System

The technology findings further extend the literature by showing the range of systems and processes involved in organizational evaluation practice. Prior literature has established that learning technologies can support the collection and management of training-related information (Bakar & Jalil, 2017; Ilyas et al., 2017) and that analytics can support the examination and use of data (Gandomi & Haider, 2015; Song et al., 2019).

The findings confirm the importance of learning technologies but also broaden the technological context in which transfer evaluation occurs. The variation in methods and technologies across evaluation activities was accompanied by the use of multiple systems for storing and managing evaluation information. LMSs were the most frequently reported technology for storing or managing evaluation data, but respondents also identified spreadsheets, non-LMS systems, HR platforms, and other technologies. Interview participants described LMSs, HRISs, CRM systems, survey platforms, spreadsheets, collaboration tools, and other applications.

This importantly extends the technology literature. Existing literature identifies what particular learning and analytics technologies can do. The present study provides evidence about where organizations obtain and manage information when evaluating training and transfer. The evidence needed to evaluate workplace behavior and organizational results may be associated with performance-management processes, business metrics, observation, feedback, HR systems, CRM systems, or other organizational processes and technologies rather than residing solely within a learning system.

The findings should not be interpreted as evidence that organizational systems are generally fragmented or poorly integrated. One interview participant specifically reported that the organization's learning system and Salesforce were not easily connected, but the study does not establish how common such integration problems are. More broadly, evaluation information was collected and managed through multiple organizational systems and methods. The technological requirements of transfer evaluation therefore extend beyond the capabilities of the LMS alone.

An Evidence-Centered View of Transfer Evaluation

Taken together, the findings provide an evidence-centered extension of the transfer and evaluation literature. Transfer research establishes that learning and workplace application are distinct and that transfer involves generalizing and maintaining learning over time (Baldwin & Ford, 1988; Blume et al., 2010, 2019). Evaluation frameworks distinguish among learning, workplace behavior, and organizational results (Kirkpatrick, 1959a, 1959b, 1960a, 1960b; Phillips, 1996). Technology research identifies systems and analytical capabilities that can support the collection, management, and analysis of evaluation data (Bakar & Jalil, 2017; Gandomi & Haider, 2015; Ilyas et al., 2017; Mattox et al., 2020; Papamitsiou & Economides, 2014; Song et al., 2019).

The present study connects these areas by showing that evaluation execution depends not only on what organizations intend to evaluate or which evaluation models they use, but also on their ability to obtain and use evidence appropriate to the outcome being examined. An evaluation

framework can identify the outcome to be evaluated, but conducting that evaluation requires evidence that can demonstrate whether the outcome occurred.

Evaluation outcome → Evidence requirement → Evidence source → Method or technology

The outcome establishes what the organization is attempting to determine. That decision establishes what evidence is needed. The evidence requirement directs attention to where the necessary information resides. The location and form of that evidence then influence the methods and technologies needed to collect, manage, analyze, and interpret it.

This sequence does not replace established transfer or evaluation models. Rather, it addresses a different question. Transfer models help explain the conditions under which learning generalizes and is maintained in workplace performance, while evaluation models help identify the outcomes to be examined. The evidence-centered perspective developed from this study focuses on what organizations need to determine whether those outcomes occurred.

The contribution of this study, therefore, is not simply that organizations use multiple evaluation models, methods, or technologies. The findings suggest that transfer evaluation is both an evidence problem and an evaluation-design problem. Determining what to evaluate is necessary, but it does not ensure that an organization can obtain and use the workplace and organizational evidence needed to determine whether training transferred to performance.

IMPLICATIONS

The findings have implications for both practice and future research.

Implications for Practice

The findings have several implications for practitioners responsible for evaluating training transfer. Most importantly, evaluation planning should begin with the outcome the organization needs to evaluate rather than with the capabilities of a particular technology. The findings showed that organizations used different evidence, methods, and technologies across evaluation activities and drew on multiple sources of workplace and organizational information when evaluating training transfer.

Evaluation outcome → Evidence requirement → Evidence source → Method or technology

Practitioners should first determine what they need to know. If the purpose is to determine whether employees learned the material, evidence generated during or immediately following training may be appropriate. If the purpose is to determine whether learning transferred to workplace performance, the evaluation requires evidence of what employees subsequently do in the work environment. If the purpose is to examine organizational results, the required evidence must correspond to the organizational outcome being evaluated.

Once the outcome has been identified, practitioners should determine what evidence would allow them to evaluate that outcome and where that evidence resides. The present study identified transfer-related evidence associated with observations, performance metrics, performance reviews, learner reports, feedback from others, and other workplace processes. This means that planning a transfer evaluation may require looking beyond information routinely available within the learning function.

Technology selection should follow these decisions rather than precede them. The findings identified LMSs, HRISs, CRM systems, spreadsheets, survey platforms, collaboration tools, and other applications used to collect

or manage evaluation information. The practical question is therefore not simply, What can our LMS measure? It is: What evidence do we need, where does that evidence reside, and what methods or technologies will allow us to obtain and use it?

When the evidence needed to evaluate transfer resides in performance-management processes, HR systems, CRM systems, business metrics, or other organizational sources, practitioners may need to work with the functions that own or manage that information. The study did not examine the effectiveness of these relationships or whether organizations routinely provide L&D access to such evidence. The implication is more limited: evaluating transfer may require practitioners to identify and obtain evidence that resides outside the learning function.

This does not mean that every training program requires a complex evaluation infrastructure or access to every organizational data source. The scope of the evaluation should correspond to the outcome being examined and the evidence needed to examine it.

Implications for Research

The findings also identify several directions for future research. The evidence-centered perspective developed in this study proposes a relationship among the outcome being evaluated, the evidence needed to evaluate that outcome, where the evidence resides, and the methods or technologies used to obtain and use it:

Evaluation outcome → Evidence requirement → Evidence source → Method or technology

This sequence emerged from integrating and interpreting the findings rather than from directly testing these relationships. Future research should therefore examine whether this sequence accurately represents how organizations plan and conduct transfer evaluation. Studies could investigate how organizations identify evidence requirements, whether those requirements influence the selection of evaluation methods and technologies, and under what conditions the proposed sequence operates differently.

A second area for research concerns how organizations obtain and use transfer-related evidence across organizational sources and systems. Participants described evaluation information associated with learning systems, HR systems, CRM systems, business metrics, performance processes, surveys, spreadsheets, observations, and other sources. The study identified the use of multiple systems and methods but did not determine how organizations locate, access, or connect evidence across those sources. Although one participant described difficulty connecting a learning system with Salesforce, that experience cannot be generalized to other organizations. Future research could examine how organizations obtain transfer-related evidence that resides outside the learning function, the extent to which organizational systems are connected for evaluation purposes, and whether differences in evidence access or system integration affect organizations' ability to evaluate workplace behavior and organizational results.

Future research could also examine the types and combinations of evidence organizations use to conclude transfer. The present study identified observations, performance metrics, skill-based evaluations, learner self-assessments, multi-source feedback, performance reviews, and other forms of evidence. However, it did not compare these evidence sources or examine how they contribute to conclusions about whether transfer occurred. Research comparing different evidence sources and combinations of sources could improve understanding of how

organizations determine whether learning has generalized to and been maintained in workplace performance.

Finally, the present study was descriptive and was not designed to determine whether particular evaluation approaches, evidence sources, technologies, or system configurations affect organizations' ability to evaluate transfer. Future research could examine these relationships without assuming that greater technological sophistication or system integration necessarily results in more effective evaluation. Such research could clarify the conditions under which different evidence sources, methods, and technologies help organizations determine whether training transferred to workplace performance.

LIMITATIONS

Several limitations should be considered when interpreting the findings. First, the quantitative sample was obtained through nonprobability, self-selected recruitment using LinkedIn channels associated with professional training and performance organizations and publications. The 135 survey respondents therefore cannot be assumed to represent the broader population of organizations that evaluate training transfer. The qualitative strand included nine participants selected from survey respondents who volunteered for follow-up interviews and was intended to explain and expand the quantitative findings rather than represent the range of transfer-evaluation practices across organizations. Although participants represented different organizational sizes and professional roles, the findings may not reflect practices across all industries, geographic regions, or organizational contexts.

Second, the study relied on participants' reports of their organizations' evaluation practices and technology use. These reports were not independently verified through organizational records, system data, direct observation, or other organizational sources. Consequently, the findings describe reported organizational practices rather than independently verified organizational behavior. Participants may also have differed in their knowledge of evaluation activities, technologies, and data sources used elsewhere within their organizations.

Third, interpretation of the qualitative data involved researcher judgment. Procedures were incorporated to strengthen the trustworthiness of the analysis, including participant transcript review and approval, written coding guidelines, a codebook, independent coding by two inter-raters, triangulation, peer review, reflective journaling, and an audit trail. These procedures strengthened the analytic process but did not eliminate the researcher's interpretive role.

Finally, the study was descriptive and was not designed to determine whether particular evaluation approaches, evidence sources, technologies, or system configurations improve organizations' ability to evaluate training transfer. The study also did not assess the quality of the evidence organizations used, the accessibility or integration of data across organizational systems, or the effectiveness of particular technologies for evaluating workplace performance or organizational results. Similarly, the evidence-centered sequence developed through integration and interpretation of the findings was not directly tested as a model. Conclusions about causal relationships, comparative effectiveness, or the validity of that sequence therefore extend beyond the scope of the present study.

CONCLUSION

This study examined how organizations evaluate training transfer and the technologies they use to support that evaluation. The findings showed that organizations used multiple approaches, evidence sources, methods, and technologies to evaluate transfer, with the evidence and methods varying according to the outcome being examined.

Taken together, the findings suggest that evaluating transfer involves more than selecting an evaluation model or technology. As evaluation moves from learning toward workplace performance and organizational results, the evidence needed to evaluate those outcomes changes. The methods and technologies used for evaluation therefore need to correspond to the outcome being evaluated, the evidence required to evaluate it, and where that evidence resides.

Evaluation models can help organizations determine what they want to evaluate, but identifying an outcome does not ensure that the organization can obtain and use the evidence needed to determine whether that outcome occurred. This study extends understanding of transfer evaluation by directing attention from what organizations intend to evaluate to the evidence they need to determine whether learning transferred to workplace performance. Transfer evaluation is both an evidence problem and an evaluation-design problem.

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