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External wine education and certification for restaurant service staff: a mixed-methods evaluation of training effectiveness

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Abstract

Purpose – The purpose of this mixed-methods explanatory sequential study was to assess the effects of an external wine education and certification program on trainee reactions, learning, transfer and financial results.

Design/methodology/approach – The quantitative phase was a mixed experimental design in which the training intervention was between-subjects and time was within-subjects. The sample comprises 91 employees ($N_{Training} = 43$; $N_{Control} = 48$) from 12 units of a fine dining restaurant group. The qualitative phase, comprised of semi-structured interviews with training group participants ($N = 12$), was implemented after the experiment.

Findings – Training group participants reported high scores for attitude toward training content, instructional satisfaction and transfer motivation. Financial metrics, tracked up to 60 days post-training, demonstrated the wine education program was effective in increasing wine knowledge but not wine sales. Four themes emerged from the qualitative data: sense of accomplishment, enhanced guest interaction, tips and gratuities and defeat. Integrated findings revealed increased wine knowledge led to personal financial impact (increased tips) rather than organizational impact.

Originality/value – This research builds on existing training literature and human capital theory by examining external training programs. Further, the use of a mixed-methods design and integration of the quantitative and qualitative findings offers a previously unidentified explanation for why wine training, although effective in facilitating positive reactions and learning, fails to result in transfer behaviors which generate increased wine sales.

Keywords Training transfer, Wine sales, Wine training, Human capital, Experiment, Mixed methods

Paper type Research paper

1. Introduction

Wine is an important aspect of the dining experience; even more so when one is dining in a restaurant. Beyond enhancing the meal itself, the range and quality of wines offered by a restaurant can be viewed as an extension of the restaurant's personality by consumers and become a proxy for judging restaurant quality (Berenguer *et al.*, 2009; Bruwer *et al.*, 2017; Ruiz-Molina *et al.*, 2010). For restaurant owners and operators, wine menus and lists can serve as a strategy for differentiation (Berenguer *et al.*, 2009). More importantly, wine sales contribute significantly to a restaurant's profitability (Bruwer *et al.*, 2019; Gultek *et al.*, 2006; Manske and Cordua, 2005; Ruiz-Molina *et al.*, 2010). Extant research has investigated and advocated a variety of methods to promote wine sales, such as the design and order of wines

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on the wine list (Sirieux *et al.*, 2011), including sensory descriptions and awards (Corsi *et al.*, 2012), and offering food-wine pairing suggestions directly on the menu (Terrier and Jaquinet, 2016).

Wine marketing literature also endorses employee wine education as a path to increased wine sales, largely on the basis that the product knowledge obtained from proper training will enable servers to effectively recommend and present specific wines to their guests (Brain, 2019; Gultek *et al.*, 2006; Manske and Cordua, 2005). It has been suggested that wine education enhances server confidence, thus increasing credibility and reducing the risk many consumers associate with selecting and purchasing wine in a restaurant dining experience (Bruwer *et al.*, 2017; Gultek *et al.*, 2006; Livat and Remaud, 2018).

This premise is consistent with human capital theory, which argues that people are a form of capital to be developed, and that education and training are an investment in human resources (Aliaga, 2001; Becker, 1964). The main outcomes from this investment are improved employee performance at the individual level and improved productivity and profitability at the organizational level (Nafuko *et al.*, 2004). Comprehensive literature and meta-analytic reviews have demonstrated that training does, in fact, have direct and positive impacts on employee performance and organizational performance (Aguinis and Kraiger, 2009; Garavan *et al.*, 2021; Kusluvan *et al.*, 2010).

Although there are multiple approaches for evaluating the effectiveness of education and training programs, the model developed by Kirkpatrick (1959) is still the predominant model. It has been used in various disciplines including management, psychology and hospitality (Arthur *et al.*, 2003; Frash *et al.*, 2008; Lacerenza *et al.*, 2017; Zhao and Namasivayam, 2009) and provides the framework for the current study. According to Kirkpatrick (1959, 1998), training outcomes can be categorized into four criteria: reactions, learning, transfer and results. Reactions represent self-reported attitudinal and affective responses to a training program, such as value of the content and satisfaction with the experience and/or the instructor. Learning focuses on quantifiable change in knowledge, skills or abilities following training. Transfer represents the extent to which an employee will actually use the knowledge, skills or abilities taught during training in their daily work; therefore, assessment of training transfer is critical for the evaluation of training effectiveness. Finally, results are defined as the final outcome of the training program and can include increased sales, higher profits, return on investment and/or decreased costs. As such, results criteria are the most distal of the four criteria (Arthur *et al.*, 2003; Kirkpatrick, 1998; Lacerenza *et al.*, 2017).

Organizations also have options regarding the manner in which education and training is provided to employees. Training can be designed, delivered and implemented by trainers within the organization (i.e. internal training) or it can be outsourced to a third-party vendor (i.e. external training). Facilitation by internal trainers is often the primary delivery method, as it is thought to be more cost-effective and offer greater ability to customize, thus meeting specific employee needs (Kodwani and Prashar, 2019). Internal trainers also have the benefit of familiarity with the organization's culture and terminology, which allows them to provide relatable examples to trainees. In contrast, external training providers can also be cost-effective, as they mitigate the need to maintain an active training staff (Shih and Chiang, 2011). External training is often accompanied by an accredited certification and led by trainers/facilitators who are subject matter experts, lending further credibility to the program and instilling confidence in the trainees (Kodwani and Prashar, 2019). Extant literature offers empirical support for the effectiveness of both internal training (e.g. Kalinoski *et al.*, 2013; Teckchandani and Schultz, 2014) and external training (e.g. Culpin *et al.*, 2014; Kodwani and Prashar, 2019), and meta-analytic evidence suggests there is no difference in effectiveness, as assessed on each of Kirkpatrick's (1959) four criteria, between programs delivered by internal vs external trainers (Lacerenza *et al.*, 2017).

Returning specifically to wine education and training, despite consistent support from wine scholars, empirical studies of such programs are minimal and offer inconclusive evidence as to their effectiveness. In a quasi-experiment with 62 servers, Granucci *et al.* (1994) provided four hours of training split over two sessions which addressed product knowledge, service and sales skills, and wine tasting. The training curriculum was based on an external program developed by the Winegrowers of California in the late 1980s but adapted specifically for the study. While Granucci *et al.* (1994) arguably adopted an external approach to training delivery, the trainer's role and qualifications were not explicitly stated; therefore, it is possible the trainer was employed by the restaurant. Wine sales were tracked for four weeks after the training. They found wine instruction was related to a significant increase in wine knowledge but not to sales; although servers in the experimental group increased their wine sales by an average of 44% after the training, this increase was not statistically significant. Nonetheless, a follow-up cost–benefit analysis indicated the restaurant owner saw a small increase in profits due to wine sales during the tracking period. More recently, Brain (2019) conducted a similar quasi-experimental study in South Africa, delivering external training to 18 participants. The curriculum was developed specifically for the study and delivered by the researcher. Compared to Granucci *et al.*'s (1994) study, the experimental group received more instruction (10 hours over four weeks), and as expected, the experimental group's wine knowledge increased significantly as a result of the training. Wine sales were tracked for three four-week time periods: before, during and after the training. While Brain (2019) concluded the increase in average wine sales per customer for the experimental group was a direct result of the training intervention, it must be noted the control group's pattern of sales was the same as the experimental group, albeit slightly lower, and no significant differences were found between the groups. Notably, neither study used an established external education or certification program for the training intervention; rather, curriculum was adapted or developed specifically for the respective studies. They also focused specifically on learning criteria (wine knowledge) and results criteria (wine sales) but did not examine trainee reactions or transfer. Exploring these evaluative criteria may have offered more conclusive explanations for the respective findings, particularly in regard to training transfer.

Other studies of employee wine education and training have focused on restaurateurs' attitudes toward training (Gultek *et al.*, 2006), the importance of wine stewards and sommeliers to wine sales (Manske and Cordua, 2005; Ruiz-Molina *et al.*, 2010), supervisory support and satisfaction with training among winery employees (Gil *et al.*, 2016), and training topics, methods and practices for tasting-room employees (Marlowe *et al.*, 2016). However, none of these studies directly assessed an educational program or training intervention. Further, the studies of wine stewards and sommeliers focused on specialist roles and excluded other members of the service staff who have the ability to influence wine sales, thus limiting their generalizability. Thus, there remains a need to comprehensively investigate the effectiveness of wine training programs for restaurant employees.

The aim of this study was to address the aforementioned limitations in the literature by using an explanatory sequential mixed-methods design (Creswell and Plano Clark, 2018) to examine the effectiveness of an external wine education and certification program in training restaurant service staff using Kirkpatrick's (1959) four evaluation criteria: reactions, learning, transfer and results. In this two-phase study, the primary quantitative phase comprised of the training intervention. Unexpected findings prompted the qualitative phase in the form of semi-structured interviews which provided the data necessary to help explain the experimental results (Creswell and Plano Clark, 2018; Fetters and Molin-Azorin, 2020). Accordingly, in addition to contributing to the literature on training effectiveness and human capital theory, this study illustrates the value of the explanatory sequential mixed-methods design for hospitality research.

2. Study context

This study was executed in partnership with the Wine & Spirits Education Trust (WSET). WSET offers courses in wine, spirits and sake (Wine & Spirits Education Trust, 2021b). WSET courses and certifications, or qualifications, are taught and proctored by Approved Program Providers (APPs), who must meet specific criteria regarding educator qualifications, staffing, course and examination venues, study materials and compliance with applicable local laws and regulations (Wine & Spirits Education Trust, 2021a).

The qualification which served as the basis of the service staff training was the WSET Level 2 Award in Wines & Spirits. The Level 2 Award is a beginner-to-intermediate level qualification, which explores wines, spirits and liqueurs, and is appropriate for individuals working in a wine-related industry. The course requires 18 hours of content to be delivered, plus additional time for the certification exam. Course content is taught through a combination of theory and tasting, and critical topics include the winemaking process, principal grape varieties and wine styles, important wine regions around the world, labeling terms and principles of wine service and food pairing (Wine & Spirits Education Trust, 2021c).

A fine dining restaurant group headquartered in the southeastern United States (US) agreed to participate in this study due to its focus on wine as an essential component of the dining experience. Its flagship restaurant chain offers 25+ wines by the glass and maintains a 250-bottle core wine list, ranging in price from US$46 to over US$1,000. Additionally, several of the group's corporate-owned restaurants have received Wine Spectator "Awards of Excellence".

At the time of the study, the restaurant group had 14 units located in Florida. All units were corporate-owned. A series of financial metrics from the prior fiscal year (e.g. annual sales, guest count, check average, wine sales, wine check average, wine mix) were analyzed for similarity and, based on this analysis, six were selected as the training units and another six were selected as the control units. The remaining two units were identified as outliers due to critical differences in the financial metrics from the rest of the state. More specifically, wine sales were significantly higher, and discussion with the beverage director for the restaurant group indicated the business cycle and clientele for these two restaurants were also different. Therefore, both were excluded from the study.

In order to properly assess the effectiveness of the education program, the full nature of the research was not disclosed to anyone employed at the restaurant unit-level (managers or service staff) at the start of the study. Only the key partners at the restaurant group's corporate office were fully briefed for the purpose of obtaining the necessary permissions and subsequent financial data. At the unit level, training units were told there was an opportunity to receive the wine education and certification at no personal cost to the employees. Control units were told the restaurant group was conducting a wine knowledge assessment for the purpose of improving internal training materials. Participants were not debriefed until both phases of the study were complete. All study procedures and protocols were approved by the researcher's Institutional Review Board. Specific details about the design, data collection and analysis for each phase are presented in the next section.

3. Methods

This mixed-methods study employed an explanatory sequential design, which consists of two distinct phases: a quantitative experiment followed by qualitative semi-structured interviews. The commonly used "follow-up explanations" variant was also employed; in this variant, the priority is placed on the quantitative phase and the qualitative phase emerges from the quantitative phase to help explain the quantitative findings. The phases are connected through the use of the quantitative results to inform the qualitative research

questions, sampling plan and interview protocol. After the qualitative phase is complete, the quantitative and qualitative findings are further connected in order to draw integrated conclusions (Creswell and Plano Clark, 2018). Figure 1 provides a diagram of the mixed-method design procedures used in this study.

3.1 Quantitative phase

The following research question guided the quantitative phase of this study:

RQ1. What is the effect of an external wine education program on (a) trainee reactions, (b) knowledge-based learning, (c) transfer and (d) financial results?

3.1.1 Quantitative design and procedure. The quantitative phase was a mixed design in which the training intervention was between-subjects (training group vs control group) and time

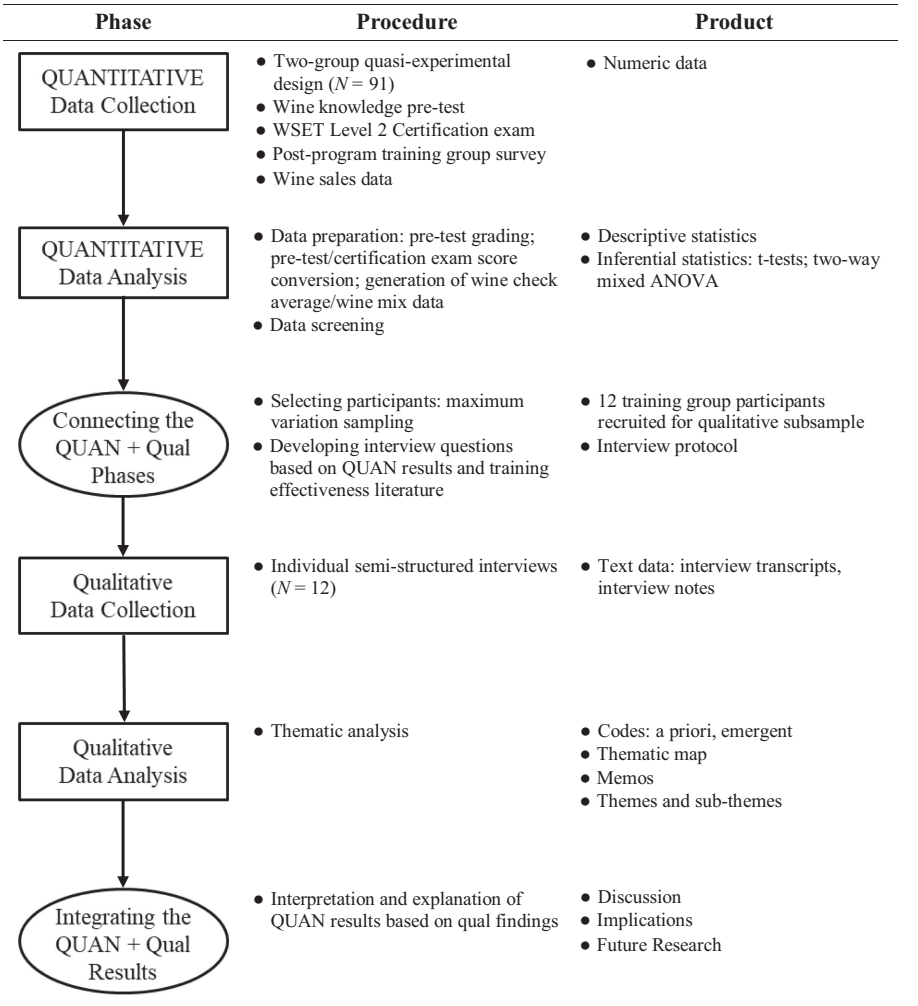

Figure 1.
Visual diagram of the mixed-methods research design

was within-subjects. Participants for the training group were recruited from the training units by the restaurant group, with the assistance of the WSET APP leading the course. Participants for the control group were randomly selected from the control units.

The 18 hours of content required for the WSET Level 2 Award were delivered by the WSET APP, who also held a Master of Wine certification, to the training group. All training sessions were held at one of the restaurant units while the restaurant was closed to the public. The training group met once a week on Saturday mornings for seven weeks: six weeks of three-hour sessions were dedicated to instruction and a final two-hour session was dedicated to the certification exam and an 18-item post-training survey to assess participant reactions and motivation to transfer training. Participation in the WSET course was voluntary, and participants could withdraw at any time. To help to mitigate attrition, participants were incentivized through the offer of a $150 Amazon gift card upon completion of the course. An additional incentive for participants who earned grades of "Pass with Merit" and/or "Pass with Distinction" on the certification exam was also offered in the form of a drawing for one of three wine-focused prizes.

3.1.2 Sample. The final sample included 91 servers and bartenders ($N_{\text{Training}} = 43$; $N_{\text{Control}} = 48$) employed by the restaurant group and statused to one of the 12 units selected for the study. Initially, 48 participants were recruited for the training group by the restaurant organization and the WSET APP; however, four participants withdrew from the training program. Another participant completed the training but was promoted to traveling corporate trainer before the close of the study, resulting in an attrition rate of 10.4% for the training group. A total of 48 servers and bartenders were randomly selected from the control units to form the control group; there was no attrition in the control group.

Participants were 61.5% male and 37.4% female. Most of the participants were employed as servers (70.3%), while a smaller percentage were employed as bartenders (17.6%) or cross-trained in both positions (12.1%). The majority reported working for the restaurant group 21–30 hours per week (69.2%). Although most participants reported working for the restaurant group for less than five years (65.5%), the majority also reported more than 10 years of experience in the hospitality industry (58.2%). Less than half (39.8%) reported earning another beverage-specific certification prior to the start of this study; examples of earned certifications included Certified Beer Server (Cicerone Certification Program), Hospitality Beverage Specialist Certificate (Society of Wine Educators) and ServSafe Alcohol or TIPS for On-Premise. A detailed participant profile, including the combined sample and broken out by group, is provided in Table 1.

3.1.3 Data collection and measures.

Wine knowledge. Wine knowledge was assessed at the start and end of the WSET course. All participants completed a 25-question wine knowledge pre-test, which was approved by a WSET content expert to ensure the level of difficulty aligned with the Level 2 certification exam yet did not directly replicate exam questions. General demographic information, such as gender, education and tenure with the restaurant group, was also included at the end of the pre-test. Training group participants completed the pre-test at the start of the first training session. Control group participants completed the pre-test, under the guise of a training exercise, during pre-shift meetings over a two-day period that coincided with the first training group session. The pre-test was scored on a 100-point scale to make it equitable with the certification exam scoring. All pre-tests were graded by a graduate teaching assistant. Participants were not made aware of their pre-test scores after grading was completed.

The 50-question WSET Level 2 certification exam, scored on a 100-point scale, served as the wine knowledge post-test for the training group. The certification exams were proctored by the APP in accordance with WSET's exam standards and practices. Completed exams

Demographic category	Combined sample ($N = 91$)	%	Training group ($N = 43$)	%	Control group ($N = 48$)	%	Chi-square significance
Gender							$p = 0.742$
Male	56	61.5%	26	60.5%	30	63.8%	
Female	34	37.4%	17	39.5%	17	36.2%	
Position							$p = 0.314$
Server	64	70.3%	31	72.1%	33	68.8%	
Bartender	16	17.6%	9	20.9%	7	14.6%	
Both/Cross-Trained	11	12.1%	3	7.0%	8	16.7%	
Hours Worked Per Week							$p = 0.345$
Less than 10 h	1	1.1%	0	0.0%	1	2.1%	
10–20 h	10	11.0%	3	7.0%	7	14.6%	
21–30 h	63	69.2%	30	69.8%	33	68.8%	
31–40 h	16	17.6%	10	23.2%	6	12.5%	
More than 40 h	1	1.1%	0	0.0%	1	2.1%	
Tenure with Restaurant Group							$p = 0.135$
Less than 6 months	7	8.6%	3	7.1%	4	10.3%	
6 months–1 year	6	7.4%	4	9.5%	2	5.1%	
1–3 years	22	27.2%	10	23.8%	12	30.8%	
3–5 years	18	22.2%	13	31.0%	5	12.8%	
5–10 years	13	16.0%	8	19.0%	5	12.8%	
More than 10 years	15	18.5%	4	9.5%	11	28.2%	
Tenure in Hospitality Industry							$p = 0.717$
Less than 6 months	0	0.0%	0	0.0%	0	0.0%	
6 Months–1 Year	0	0.0%	0	0.0%	0	0.0%	
1–3 years	7	7.7%	2	4.7%	5	10.4%	
3–5 years	15	16.5%	8	18.6%	7	14.6%	
5–10 years	16	17.6%	7	16.3%	9	18.8%	
More than 10 years	53	58.2%	26	60.5%	27	56.3%	
Education							$p = 0.078$
Did not finish high school	1	1.1%	0	0.0%	1	2.2%	
High school/GED	27	30.3%	9	20.9%	18	39.1%	
Associate's/2-yr degree	24	27.0%	17	39.5%	7	15.2%	
Bachelor's/4-yr degree	32	36.0%	15	34.9%	17	37.0%	
Graduate degree or beyond	5	5.6%	2	4.7%	3	6.5%	
Holds Another Beverage-Specific Certification							$p = 0.631$
No	53	60.2%	27	62.8%	26	57.8%	
Yes	35	39.8%	16	37.2%	19	42.2%	

Table 1.
Participant profile

Note(s): Totals may not equate to respective Ns due to missing data

were sealed and sent to WSET for scoring; scores were returned to the APP and participants within four weeks.

Attitude towards training content. Four items from Gegenfurtner *et al.* (2009) were adapted to assess training group participants' cognitive and affective judgments about the training content. A sample item is "I can easily come up with at least 5 reasons to apply the content of this course to my job" (1 = strongly disagree to 7 = strongly agree; $\alpha = 0.73$).

Instructional satisfaction. Six items were used to assess training group participants' affective reactions toward instructional methods and activities used during the external education program (Gegenfurtner *et al.*, 2009; Lim and Morris, 2006). A sample item is "The

examples used by the instructor were colorful" (1 = strongly disagree to 7 = strongly agree; $\alpha = 0.78$).

Motivation to transfer training. Training motivation, or the desire of training group participants to use the knowledge and skills learned during the external education program, was assessed with eight items from Gegenfurtner *et al.* (2009). Sample items include "While applying training at work, I can learn a lot" and "This learning is important for me" (1 = strongly disagree to 7 = strongly agree; $\alpha = 0.91$).

Wine sales. Individual participant sales data, by fiscal week, was provided by the restaurant group. Sales data included total sales, wine sales, guest count and check average. From this data, wine-specific check averages and wine mix percentage (wine sales as a percentage of total sales) were calculated for each participant in both the training group and the control group.

3.1.4 Data analysis. All data cleaning and quantitative data analysis were conducted in SPSS v.26.0. Scale scores were created for attitude toward training content, instructional satisfaction and motivation to transfer. Descriptive and inferential statistics, including paired-sample and independent-sample *t*-tests, were used to address RQ1(a–c). To address RQ1(d), the financial results, a 2×4 mixed-design analysis-of-variance (ANOVA) was deemed appropriate. All assumptions for the use of a mixed ANOVA were met. In the context of this study, the mixed ANOVA procedure was used to determine whether any change in wine sales was the result of the interaction between the group (training vs control) and time (Time 0: start of training, Time 1: end of training, Time 2: 30 days post-training, Time 3: 60 days post-training). Bonferroni-adjusted post hoc tests of the main effects were also conducted when relevant (Field, 2013). Wine check average and wine mix were used as the proxy for wine sales, as these metrics mitigated individual participant factors such as scheduling variations and number of hours worked.

3.2 Qualitative phase

The following research questions guided the qualitative phase of this study:

RQ2. How do participant experiences in an external wine education program affect their post-training reactions and behaviors?

RQ3. How do participant reactions to their certification exam result affect their post-training behaviors?

3.3 Qualitative design

The qualitative phase used semi-structured interviews and a nested sampling design, where participants were selected from and represent a subset of the larger sample from the previous (quantitative) phase (Ivankova, 2014; Onwuegbuzie and Collins, 2007). As the primary purpose of this phase was to understand the experiences of training group participants in order to provide a more meaningful explanation of the quantitative results and the complexities of training transfer, a maximum variation approach was adopted. With this approach, researchers can identify how a phenomenon is experienced by diverse stakeholders (Suri, 2011). The rich data gained through in-depth follow-up from participants with a range of perspectives also aids in explaining nonsignificant quantitative results (Creswell and Plano Clark, 2018; Ivankova, 2014; Onwuegbuzie and Collins, 2007).

3.3.1 Sample. Twelve participants from the training group were recruited through the maximum variation sampling approach. Four criteria were taken into consideration: restaurant unit, certification exam result, difference in exam scores from pre- to post-test, change in wine check average from Time 0 to Time 3 and change in wine mix from Time 0 to Time 3. Table 2 outlines the characteristics of each participant. Critically, there was at least one participant from every training unit, and an equitable representation of certification exam results: four had passed the exam, four had passed with a grade of Merit or Distinction and four had failed the

Participant (restaurant unit)	Certification exam result	Exam score difference Pre-test to post-test	Change in wine check average Training start to 60 days post-training	Change in wine mix Training start to 60 days post-training
ID60 (Unit 3)	Pass	+6 points	−$9.85	−11.1%
ID54 (Unit 2)	Pass	+10 points	+ $6.04	+6.9%
ID68 (Unit 4)	Pass	+36 points	+ $6.13	+2.4%
ID87 (Unit 6)	Pass	+36 points	−$2.49	−2.6%
ID64 (Unit 3)	Pass with Merit	+18 points	−$6.49	−5.2%
ID57 (Unit 2)	Pass with Merit	+26 points	+ $1.74	+0.1%
ID52 (Unit 1)	Pass with Merit	+56 points	−$10.36	−14.7%
ID69 (Unit 4)	Pass with Distinction	+30 points	−$4.37	−3.1%
ID86 (Unit 6)	Fail	+12 points	+ $1.26	+2.8%
ID73 (Unit 4)[a]	Fail	+18 points	+ $1.12	−0.1%
ID50 (Unit 1)[a]	Fail	+20 points	+ $3.29	+4.1%
ID77 (Unit 5)[b]	Fail	+34 points	−$2.65	−2.2%

Table 2. Characteristics of the qualitative subsample

Note(s): [a]Participant self-reported motivation to transfer was 1 SD below the mean; [b]Participant self-reported motivation to transfer was 2 SD below the mean

exam. There was also variability and a range of combinations in the three difference/change metrics (e.g. large increase in exam score + increase in wine check average/wine; large increase in exam score + decrease in wine check average/wine). Recruitment for this phase was handled by the researcher, and participants were contacted via email with the interview request. No additional incentives were offered to study participants for the qualitative phase.

3.3.2 Semi-structured interview protocol. The interview questions were developed based on the data from the quantitative phase and the review of relevant literature. Interview questions focused on the participant experience post-training, both professionally and personally. Sample questions included "How have you incorporated the wine training into your server (bartender) role?", "Have you noticed any changes in the way you interact with guests? If so, what are they? If not, why do you think that is?", "How did you feel when you received your certification exam results?" and "What has been the most positive (negative) aspect of this experience for you?". Interviews lasted for 15–30 min and were conducted in person or over the phone, depending on the participant's availability and preference. In-person interviews were carried out at a non-work location and outside of the participant's work hours. In addition to taking notes during the interview, all interviews were audio-recorded.

3.3.3 Data analysis. The qualitative data analysis was guided by Braun and Clark's (2006, 2012) phases of thematic analysis. After transcribing the interviews, the researcher familiarized themself with the data and recorded preliminary thoughts. The data was initially coded using both *a priori* codes consisting of words and phrases that related to training transfer motivation and behavior as well as emergent codes. The codes were mapped in order to identify themes and sub-themes, and during this process memoing was used to capture spontaneous ideas and thoughts about the data (Miles and Huberman, 1994; Saldaña, 2013). Finally, each theme was reviewed for its relationship to the quantitative phase, further refined and given a label representative of its scope.

4. Results

4.1 Quantitative phase

Preliminary analysis of participant demographics, wine knowledge and wine sales was conducted to ensure the training and control groups were suitable for comparison. First, a

series of chi-square tests indicated there were no significant association between study group and participant demographics (all ps > 0.05, see Table 1). Second, an independent samples t-test indicated there was no significant difference in wine knowledge [$M_{\text{Training}} = 41.9$, SD = 16.36; $M_{\text{Control}} = 46.8$, SD = 16.33, t (91) = −1.43, $p = 0.156$, mean difference = 4.9 points]. Third, wine sales, using wine check average and wine mix as the proxies, were assessed via a series of independent samples t-tests at 90 days, 60 days and 30 days prior to the start of the training program. The results of these t-tests determined there were no significant differences between the training and control groups with respect to wine sales or wine mix (ps > 0.05). Detailed results are provided in Table A1.

4.1.1 Reactions. The results indicate that training group participants had a positive attitude toward the training content ($M = 6.73$, SD = 0.42) and were also highly satisfied with the instructional methods and activities used during the program ($M = 6.69$, SD = 0.38). Collectively, this suggests there was a positive reaction to the external wine education program.

4.1.2 Learning. A paired samples t-test of the training group indicated there was a significant increase in training group wine knowledge from the pre-test ($M = 41.9$, SD = 16.36) to the certification exam ($M = 64.4$, SD = 13.98), t (43) = 10.54, $p < 0.001$, $d = 1.59$. Both exams were based on a 100-point scale, and the mean increase in scores was 22.4 points (95% CI: 18.12 to 26.69). Also notable is that 70.5% of the training group participants passed the certification exam, earning the Level 2 Award in Wine & Spirits, and 40.9% of the training group participants also earned the additional grade of "Passed with Merit" or "Passed with Distinction". However, as 29.5% of the training group participants did not pass the certification, additional training group-specific comparisons (certification exam result: fail vs pass) are included in the subsequent analyses.

4.1.3 Transfer. The results suggest that training group participants had high levels of motivation to transfer training ($M = 6.38$, SD = 0.83). An independent samples t-test indicated there was no significant difference in transfer motivation between those who passed the exam ($M = 6.43$, SD = 0.78) and those who failed the certification exam ($M = 6.24$, SD = 0.97), t (40) = 0.66, $p = 0.510$. The mean difference was 0.19 (95% CI: −0.39 to 0.77).

4.1.4 Financial results.

Wine check average. A 2 × 4 (Group × Time) mixed ANOVA was conducted on wine check average (see Table 3 and Figure 2). The main effect of group was not significant [F (1, 86) = 0.499, $p = 0.482$, partial $\eta^2 = 0.006$], suggesting that when the time factor is collapsed, the wine check averages of the training group and the control group were similar. The main effect of time was also not significant [F (3, 258) = 1.438, $p = 0.232$, partial $\eta^2 = 0.016$], suggesting that when the group factor is collapsed, the wine check averages over the four time points did not differ significantly. The analysis also revealed there was no statistically

	Time			
	Time 0 Training start Mean (SD)	Time 1 Training end Mean (SD)	Time 2 30 Days post-training Mean (SD)	Time 3 60 Days post-training Mean (SD)
Training Group	$11.61 (5.475)	$10.93 (3.871)	$11.87 (6.733)	$10.77 (4.809)
Control Group	$11.09 (4.341)	$12.04 (5.199)	$10.94 (4.203)	$9.58 (4.263)
Failed Certification Exam *(Training Group Only)*	$13.96 (6.627)	$11.97 (4.137)	$12.74 (8.112)	$9.96 (3.048)
Passed Certification Exam *(Training Group Only)*	$10.67 (4.746)	$10.52 (3.751)	$11.526 (6.217)	$11.10 (5.366)

Table 3. Means and standard deviations of wine check average by group and time

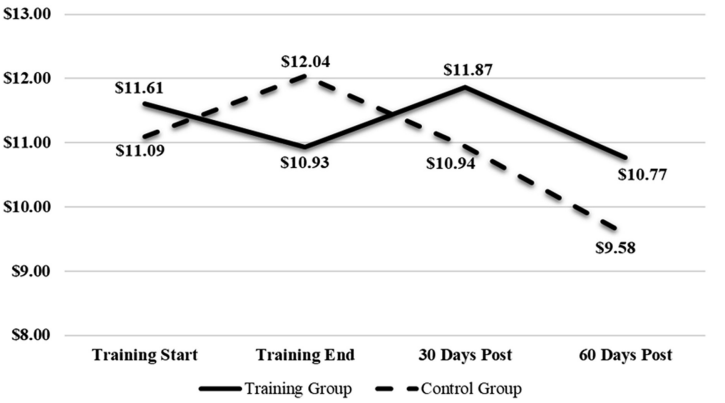

Figure 2.
Wine check average over time by experimental group

significant interaction between group and time on wine check average [F (3, 258) = 0.990, p = 0.398, partial η^2 = 0.011].

Wine check average – Training group only. A 2 × 4 (Certification Exam Result × Time) mixed ANOVA was also conducted on wine check average of the training group (see Table 3). The main effect of certification exam result (pass vs fail) was not significant [F (1, 40) = 2.501, p = 0.122, partial η^2 = 0.059]. The main effect of time was also not significant [F (3, 120) = 0.758, p = 0.520, partial η^2 = 0.019]. The analysis also revealed there was no statistically significant interaction between the certification exam result and time on wine check average [F (3, 120) = 0.911, p = 0.438, partial η^2 = 0.022].

Wine mix. A 2 × 4 (Group × Time) mixed ANOVA was conducted on wine mix (see Table 4 and Figure 3). Results indicated a nonsignificant main effect of group [F (1, 86) = 1.037, p = 0.311, partial η^2 = 0.012]; however, there was a significant main effect of time [F (3, 258) = 2.678, p = 0.048, partial η^2 = 0.030]. Post-hoc analysis using the Bonferroni-adjustment for multiple comparisons showed that wine mix at the end of training ($M_{\text{Time 1}}$ = 14.3%) was significantly higher than the wine mix at 60 days post-training ($M_{\text{Time 3}}$ = 12.4%). No other significant differences were found among the timepoints. The analysis also indicated the interaction between group and time was not significant [F (3, 258) = 0.556, p = 0.645, partial η^2 = 0.006].

Wine mix – Training group only. A 2 × 4 (Certification Exam Result × Time) mixed ANOVA was also conducted on wine mix of the training group (see Table 4). Results indicated

Table 4.
Means and standard deviations of wine check mix by group and time

	Time			
	Time 0 Training start Mean (SD)	Time 1 Training end Mean (SD)	Time 2 30 Days post-training Mean (SD)	Time 3 60 Days post-training Mean (SD)
Training group	0.144 (0.055)	0.141 (0.050)	0.144 (0.063)	0.132 (0.047)
Control group	0.137 (0.052)	0.144 (0.052)	0.134 (0.047)	0.118 (0.045)
Failed certification exam *(Training Group Only)*	0.176 (0.053)	0.169 (0.065)	0.162 (0.075)	0.135 (0.038)
Passed Certification Exam *(Training Group Only)*	0.132 (0.052)	0.129 (0.039)	0.137 (0.057)	0.130 (0.051)

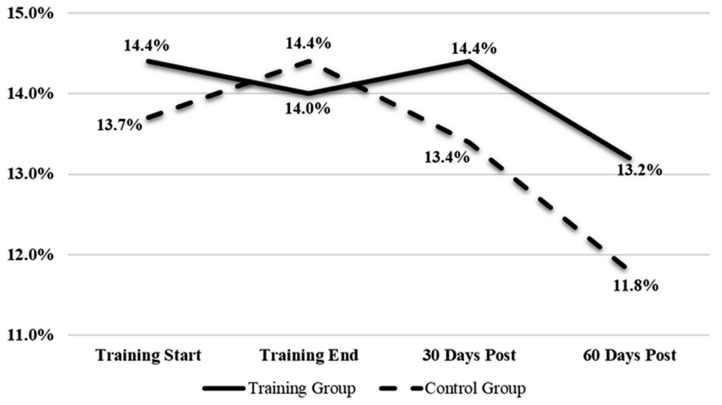

Figure 3.
Wine mix over time by experimental group

the main effect of certification exam result was significant [F (1, 40) = 9.691, p = 0.003, partial η^2 = 0.195]. Unexpectedly, the mean wine mix for participants who failed the certification exam (M = 16.0%) was significantly higher than for participants who passed the certification exam (M = 13.2%). The main effect of time was not significant [F (3, 120) = 1.055, p = 0.371, partial η^2 = 0.026]. The analysis also indicated the interaction between certification exam result and time was not significant [F (3, 120) = 0.981, p = 0.401, partial η^2 = 0.024].

4.2 Qualitative phase

Thematic analysis of the qualitative data resulted in four overarching themes: sense of accomplishment, enhanced guest interaction, tips and gratuities, and defeat. Although there was not a precise demarcation, broadly speaking, the first three themes emerged primarily from participants who passed the certification exam, while the final theme emerged primarily from participants who failed the certification exam. These findings address this study's second and third research questions.

4.2.1 Sense of accomplishment. In exploring how the external wine education program influenced training group participants' attitudes, there was clear consensus that completing the program and passing the exam fostered a sense of accomplishment. Several interviewees stated they were proud they had achieved the WSET Level 2 Award, and that their families, friends and coworkers were also proud of them. For example, Participant 60 said "*I was off the day we got the exam results. When I found out I passed, my husband took me out to celebrate*". Comparatively, one interviewee acknowledged "*I did not pass the exam but I learned so much from doing this. I still feel good about it*" (Participant 73). Individual and collective efforts were also recognized at the restaurant-unit level and from the corporate level, further contributing to participants' feelings of accomplishment and pride. One example of this recognition was the incentive drawing, which was attended by unit managers and representatives from the corporate offices in addition to many training group participants. Serving as a resource for coworkers who did not take part in the education program was another way in which participants' sense of accomplishment was reinforced. As noted by Participant 69, "*I'm the wine guy now*".

4.2.2 Enhanced guest interaction. The second theme, enhanced guest interaction, reflects how participants' experiences in the wine education program influenced or changed their guest-facing behaviors after the program ended. For example, interview participants, particularly those who passed the certification exam, indicated a desire to spend more time talking with their guests and sharing what they learned during the training. The comment from Participant

57 exemplified this sentiment: "*I am so excited when I see someone looking at the wine list. I have so much I want to tell them.*" Interview participants also reported they felt more comfortable answering guest questions about wine. Participant 87 commented that prior to the education program, they "*just relied on the information [the restaurant group] or a brand gave us*" and "*did not go any further*". Participant 68 said "*There's information we have to know because it's part of the menu, but before if a guest asked a question that wasn't in our regular training, I would go get someone else to help them. Now I can start the conversation*". Finally, interviewees reported being more focused on helping guests select what they perceived to be the "right" or "best" wine for their meal, rather than using a general upselling strategy. Participant 52 noted that they are "*suggesting wines that pair with the food*" even if "*they might be cheaper*".

4.2.3 Tips and gratuities. The third theme, gratuities, reflects the additional direct compensation earned after completing the wine education program. This theme emerged from interview participants who passed the certification exam and is related to but separate from the theme of enhanced guest interaction. According to these participants, they were earning more in tips and gratuities from guests. For example, Participant 64 said "*My average take home in tips has definitely gone up and I cannot think of anything else different I'm doing*" while Participant 52 stated "*I think guests appreciate it when you take care of them. And then they take care of you [with the bill]*". As evidenced by this quote, participants believed the increase in tips was due to the additional effort they were putting forth to talk to their guests about wine and guide them through wine selections.

4.2.4 Defeat. The final theme which emerged from the qualitative analysis contrasts the positivity of the preceding themes, and largely reflects the attitudes and behaviors of interview participants who failed the certification exam. These participants reported feeling discouraged after receiving the exam results. For example, Participant 77 said "*I went to every class and I studied and I still did not pass. I'm. . .I do not know. . .it's like I wasted six weeks*". Interviewees also reported feeling insecure about their mastery of the course content once they were aware of the results and, consequently, less enthusiastic than their peers who passed the exam to initiate conversations about wine. Instead, this sub-group reverted to more standardized and scripted upselling strategy which focuses on suggesting wines based on price point. For instance, Participant 50 explained "*None of our wines are bad. If I have to make a recommendation, I suggest the more expensive one because I make my money on how much the final bill is*". A few interviewees who passed the certification exam also indicated they adopted this strategy because, while they felt comfortable in their wine knowledge, they were unsure of how to convert that knowledge into "targeted" sales: "*I'm still using the standard upselling approach. I use what we learned to answer questions, but I do not think we spent enough time practicing selling*" (Participant 54).

5. Discussion and integration of quantitative and qualitative findings

The aim of this mixed-methods explanatory sequential study was to evaluate the effectiveness of an external wine education program across Kirkpatrick's (1959) criteria of trainee reactions, learning, transfer and financial results in the context of restaurant service staff. Extant literature has promoted wine training for restaurant employees as a means of increasing wine sales (Brain, 2019; Gultek *et al.*, 2006; Manske and Cordua, 2005); however, empirical studies are limited and lack consistent evidentiary support for the connection between training and positive financial impact. Given the complexity of training evaluation (Lacerenza *et al.*, 2017), the use of a mixed-methods design offers a unique perspective into the participant experience both during and after training, and integration of the quantitative and qualitative findings allows for a more comprehensive understanding of the different outcomes of the wine education program. Specific findings are discussed below and summarized in Table 5.

Quantitative findings indicated that the external wine education program was effective when considering trainee reactions as the criteria of evaluation. At the completion of the program, training group participants were satisfied with the instructor and the training materials. They also found the program applicable to their daily work. However, the qualitative findings revealed participant reactions diverged when the certification exam results were distributed. Passing the certification exam engendered a sense of accomplishment and pride, thus reinforcing the earlier positive reactions. By comparison, a negative result had the opposite effect and led to feelings of disappointment and discouragement. Understanding how the certification exam result changed participants' reaction to the wine education program is significant because it has the potential to affect other outcomes, including their level of comfort with the content and motivation to apply the new knowledge or skills (Gegenfurtner *et al.*, 2009; Hughes *et al.*, 2016).

The quantitative findings also suggest the external wine education program was effective when learning is the criteria of evaluation, as the intervention led to a significant increase in wine knowledge. This result is consistent with the prior studies of wine training (Brain, 2019; Granucci *et al.*, 1994). It also lends support the general positive effects of external training programs on cognitive learning. Qualitative findings corroborated the qualitative results, as even participants who failed the certification exam acknowledged they learned throughout the program.

Transfer is the third criteria for evaluating training effectiveness. Employees must be motivated to transfer training in order for behavioral changes, or actual training transfer, to transpire (Gegenfurtner *et al.*, 2009). Quantitatively, training group participants reported high levels of motivation to transfer training at the end of the education program, but the qualitative findings were necessary to demonstrate how and where actual training transfer did or did not occur. Specifically, participants who passed the certification exam expressed an increased desire to talk about wine and share the knowledge gained from the education program with their guests. They also adjusted their sales strategies to focus on food and wine pairing rather than consistently recommending higher-priced wines. Critically, the qualitative findings also revealed that motivation to transfer did not lead to actual training transfer for all participants; in part due to uncertainty or confusion as to how to best apply the training content.

Financial results were the fourth criteria. The quantitative results alone indicate the wine education was not effective in increasing wine sales, as neither participation in the education program nor success on the certification exam led to significant increases in wine check average or wine mix. An important unexpected result was that the sub-group of participants who failed the certification exam had a significantly higher wine mix than the sub-group of participants who passed the exam. While it is possible the nonsignificant results can be attributed to sample size and a lack of statistical power, the qualitative findings provide two alternative explanations. The first explanation is that financial results were achieved, but the impact was to the employee instead of the restaurant. Training group participants who passed the certification exam conveyed spending more time guiding guests through the wine menu and helping them to choose the "best" wine for their meal. In other words, they were focused on conversing with guests about wine, and while this likely led to a sale, it may not have led to selling a higher-priced wine. Thus, participants' ability to effectively speak to their guests about wine resulted in a direct (positive) financial impact in the form of tips rather than sales. The second explanation stems from the divergence in reactions to the certification exam results, which was a catalyst for behavioral change that affected financial results. Participants who failed the exam returned to a scripted sales strategy that focused on upselling and price point, which likely increased their wine mix.

Table 5.
Joint display of integrated findings

Training effectiveness evaluation criteria	Quantitative findings (TG = Training; CG = Control)	Qualitative findings (T = Theme)	Integrated analysis

Reactions	• TG participants had a positive attitude toward the training content
	• TG participants were highly satisfied with the instructor and training materials
		• Sense of Accomplishment (T1): Pride in passing the certification exam; recognition from coworkers, managers and the corporate team
		  • *"I'm the wine guy now"*
		• Defeat (T4): Feelings of disappointment and discouragement upon receiving the exam results
		  • *"…it's like I wasted six weeks"*
			• Immediate reactions to the wine education program were consistently positive, but diverged when the certification exam results were distributed a month later

Learning	• Significant increase in TG wine knowledge from pre-test to post-test • 70.5% of TG passed the certification exam	• Sense of Accomplishment (T1): Recognition of learning and knowledge gained • *"I did not pass the exam but I learned so much from doing this"*	• The wine education program was effective in positively impacting learning

Transfer	• TG participants indicated a high level of transfer motivation
	• No significant difference in reported transfer motivation between participants who passed the certification exam and participants who failed the certification exam
		• Enhanced Guest Interaction (T2): Positive changes to guest-facing behavior, including more time with each table and focusing on "ideal" food-wine pairings
		  • *"I have so much I want to tell [guests]"*
		  • *"I'm suggesting wines that pair with the food. Sometimes they might be cheaper."*
		• Defeat (T4): Uncertain or confused as to how to transfer knowledge to sales
		  • *"I don't think we spent enough time practicing selling"*
			• Participants' transfer motivation was high at the end of the wine education program but motivation to transfer did not lead to actual training transfer for all participants

(*continued*)

Training effectiveness evaluation criteria	Quantitative findings (TG = Training; CG = Control)	Qualitative findings (T = Theme)	Integrated analysis

Financial results	• No effect of training on wine sales
	  • No significant difference between TG and CG for wine check average or wine mix
	  • No significant interaction between group (TG vs CG) and time (pre-training to 60 days post-training) for wine check average or wine mix
	• Within the TG, wine mix was significantly higher for participants who failed the certification exam (16.0%) than for exam (13.2%)
		• Tips and Gratuities (T3): Increase in direct compensation from guests as a result of participation in the wine education program
		  • "*My average take home in tips has definitely gone up*"
		• Defeat (T4): Use of a scripted upselling strategy focused on price point
		  • "*If I have to make a recommendation, I suggest the more expensive one because I make my money on how much the final bill is*"
			• For participants who passed the certification exam, financial results were achieved but in the impact was to the employee instead of the restaurant
			• For participants who failed the certification exam, use of a price-driven sales strategy contributed to higher wine mix

Table 5.

5.1 Implications

This study offers implications for both theory and practice. Although human capital theory posits an outcome of training investment is improved organizational performance and Kirkpatrick's (1959) training effectiveness framework defines (financial) results as the final outcome of training, the integrated findings offer evidence of the inability of training to directly affect such distal outcomes. At the same time, the findings demonstrate that when financial outcomes are redefined to the individual employee, rather than the organizational level, investment in human capital through training and education can have a positive impact.

Practically, training facilitators and restaurant organizations can also benefit from this study. The findings highlight the importance of trainee reactions on subsequent outcomes and that reactions are not static; thus, capturing reactions at multiple timepoints after training ends can offer valuable insights into learning, motivation and transfer.

5.2 Extensions for future research

The mixed-methods approach is a noteworthy strength of the current study; however, additional research is essential to replicate the findings and address specific limitations within the quantitative phase. As a field study in which participants volunteered for the wine education program, the quantitative phase was quasi-experimental. The design included a training (intervention) group and a control group, and steps were taken to validate comparability between the two groups prior to the start of the experiment, but randomization was not employed. The control group was also not able to complete a wine knowledge post-test. A third limitation was the sample size which, while larger than prior studies, presents challenges for statistical power. Future research should attempt to pursue a range of intervention designs and strategies to further advance and refine our understanding of training effectiveness. For example, researchers might incorporate randomization, recruit a larger sample size or design a study which compares the effectiveness of two different education programs (e.g. internal vs external). Given that the ultimate goal of the training is to increase wine sales, researchers may also consider different metrics for assessing financial results. For example, tracking the percentage of guests who ordered wine before and after the training may reveal impacts not evident in wine check average or wine mix. Finally, this study also focused on relatively short-term changes in learning. Future research should consider both a short-term and long-term timeline in order to better understand knowledge retention and the effect on training transfer.

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Appendix

	Wine check average			Wine mix		
	Training group	Control group	Statistics	Training group	Control group	Statistics
90 days pre-training	\$10.73	\$11.87	$t(81) = -0.814$ $p = 0.418$	13.4%	13.5%	$t(81) = -0.115$ $p = 0.909$
60 days pre-training	\$11.72	\$12.58	$t(85) = -0.692$ $p = 0.492$	14.5%	14.1%	$t(85) = 0.325$ $p = 0.746$
30 days pre-training	\$14.16	\$11.95	$t(88) = 1.179$ $p = 0.242$	15.5%	13.5%	$t(88) = 1.536$ $p = 0.128$

Table A1. Pre-training wine sales analysis

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